

High Body Mass Index: prejudice, stereotypes, discrimination and its consequences in Norway

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Master Thesis

Department of Health Management and Health Economics

Institute of Health and Society

Faculty of Medicine

UNIVERSITY OF OSLO

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“The First Wealth is Health”
(Ralph Waldo Emerson)



Preface

The idea to write this master thesis about the socioeconomic problems of the individuals with high body mass index and its stereotypes, consequences comes to me since I know this problem personally.

I would like to make to reconsider people their attitude to the problem of overweight. I think we have to pay more tolerant attention in our society for the overweight people around us. How do we pay attention to others, thus do we have our stereotypes in the society.

I sincerely hope that it will be read, and it will make to improve our attitude in our society in front of overweight people and for the further research socioeconomic conditions and problems of this target group.

Acknowledgements

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Yulia Langeland

Oslo, May 2012

All errors are the author`s.

ABBREVIATIONS AND ACRONYMS

BEBAS	Central demography/population database in Statistics Norway (Den sentrale demografi-/befolkningsdatabasen i SSB)
BLD	Ministry of Children and Equality (Barne- og familiedepartementet)
BMI	Body Mass Index
HRQOL	Health-related quality of life
NAFKAM	The National Research Center in Complementary and Alternative Medicine (Nasjonalt forskningscenter innen komplementær og alternativ medisin)
NSD	Norwegian Social Science Data Services (Norsk samfunnsvitenskapelig datatjeneste)
SSB	Statistics Norway (Statistisk Sentralbyrå)
USA	The United States of America
WHO	World Health Organization
UiO	University of Oslo (Universitetet I Oslo)
(Author, year)	Reference
word^a	Footnote

Abstract

Background: There are many possible consequences of discrimination of overweight people such as stigma and weight-based stereotypes in our society. Examples are higher risk of being single, less opportunity to be hired in the labor market, less opportunity to achieve higher education and to be less desirable as a friend in order to have social contacts. All these stereotypes in our daily life are harmful to the high Body Mass Index (BMI) individuals and make us behave in a negative way which leads to the discrimination of high BMI individuals and weight - based stereotypes. In my Master thesis I am going to investigate the correlation between BMI as the outcome and independent variables such as civil status, work, social activities, mental health and feeling of discrimination which can be the result of social discrimination of the high BMI target group and I am going to analyze what factors are stronger as the results.

Methods: Data was provided by SSB's "Level of living 2008 - Cross sectional study - Health" (Samordnet levekårsundersøkelse 2008 - Tversnitt Tema: Helse). The main topic of the Level of Living Survey 2008 is health issues such as: symptoms of health problems, functional ability, living habits, use of health services care, social contact. This survey also covered some other issues such as: civil status; work position; social contacts and activities; violence and threat; discrimination; gender; weight and height, which give us opportunity to calculate the BMI as the outcome. Having estimated simple linear regressions for each separate independent variable, I proceeded to estimate a multiple regression, thus investigating the effect of all independent variables together. In order to avoid a very complicated model, I used only those variables that were found significant in the simple regression analysis, and kept only variables with p-values below 20% in the final model. The analyses of the data were performed in PASW Statistics (Predictive Analytics Software) formerly SPSS.

Results: The results of the survey indicate that (i) being a male is associated with an increase in BMI, (ii) being subjected to violence and threat is associated with a decrease in BMI and (iii) having less social contacts and less participating in the cultural activities is associated with an increase in BMI.

Interpretation/Conclusion: The results of this study imply that there are certain factors associated with an increase in BMI. Some findings are: being a male is associated with an increase in BMI, being subjected to violence and threat is associated with a decrease in BMI, having less social contacts and less participation in cultural activities is associated with an increase in BMI. However, the study do not support the suggestions that being single, being out of the labor market experiencing general discrimination or having mental problems are associated with higher BMI. In conclusion, not much evidence from data that people with higher BMI are experienced to have problems in everyday life in Norway.

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1. AIMS OF THESIS

There are many possible consequences of discrimination of overweight people such as stigma and weight-based stereotypes in our society. Some, such as higher risk of being single, less opportunity to be hired in the labor market, less opportunity to achieve higher education and to be less desirable as a friend in order to have social contacts. All these stereotypes in our daily life are harmful to the high BMI individuals and make us behave in a negative way which leads to the discrimination of high BMI individuals and weight - based stereotypes.

In my Master thesis I am going to investigate the correlation between Body Mass Index (BMI) as outcome and some variables such as civil status, work position, social status, activities and depression which can be the result of discrimination of the high BMI target group. I am going to analyze which factors are most associated with the outcome, in order to help my readers understand better the problems of high BMI and overweight individuals. E.g. are overweight people more often single, depressed or otherwise prone to negative consequences that may be related to their high BMI.

I used the secondary data that was provided from Statistics Norway (Statistisk Sentralbyrå, SSB). Original data from Statistics Norway are documented and prepared, first version performed by the Norwegian Social Science Data Services (Norsk samfunnsvitenskapelig datatjeneste, NSD) as data distributer.

2. GLOBAL REVIEW

“Obesity is one of the greatest public health challenges of the 21st century. Its prevalence has tripled in many countries in the WHO European Region since the 1980s, and the numbers of those affected continue to rise at an alarming rate, particularly among children. Obesity is already responsible for 2-8% of health costs and 10-13% of deaths in different parts of the Region.” (World Health Organization Regional Office for Europe, 2008)

“Obesity brings an enormous burden of disability and mortality, as well as an economic challenge. Calculating a person's body mass index (BMI) is the most common method of measuring overweight and obesity in adults. A healthy lifestyle is essential in counteracting obesity.” (World Health Organization Regional Office for Europe, 2009).

2.1. Definition of BMI

According to WHO there is a Body Mass Index (BMI) classification. Body Mass Index (BMI) is a simple index of weight-for-height that is commonly used to classify underweight, overweight and obesity in adults. It is defined as the weight in kilograms divided by the square of the height in meters (kg/m^2). For example, an adult who weighs 78 kg and whose height is 1.78 m will have a BMI of 24.62

$$\text{BMI} = 78 \text{ kg} / (1.78 \text{ m})^2 = 78 / 3,1684 = 24,62$$

Table 2.1.1 The International Classification of adult underweight, overweight and obesity according to BMI

Classification	BMI (kg/m²)
Underweight	<18.50
Severe thinness	<16.00
Moderate thinness	16.00 – 16.99
Mild thinness	17.00 – 18.49
Normal range	18.50 – 24.99
Overweight	≥25.00
Pre – obese	25.00 – 29.99
Obese	≥30.00
Obese class I	30.00 – 34.99
Obese class II	35.00 – 39.99
Obese class III	≥ 40.00

BMI values are age and sex independent. However, BMI may not correspond to the same degree of body-fat in different populations due, in part, to different body proportions. The health risks associated with increasing BMI are continuous and the interpretation of BMI grading in relation to risk may differ for different populations.

The WHO defines "overweight" as a BMI equal to or more than 25, and "obesity" as a BMI equal to or more than 30, as shown in table 2.1.1.

2.2 High body mass index: Prejudice, stereotypes, discrimination and its consequences.

In this chapter I would like to focus more how our society is prejudiced against overweight people based on review of the articles.

According to WHO the prevalence of overweight in North America, Middle East, Australia and China is three times higher today than in 1980. A report in 2008 shows that in 2005, 937 million adults were overweight and 400 million were obese. (Norwegian Institute of Public Health, 2009)

According to Crocker, Cornwell, & Major (1993) overweight people are characterized as physically unattractive and associated as "lazy", "stupid", "lacking willpower", "ugly", "incompetent". The fact that one is overweight is immediately *visible* to others and therefore may effect most social interactions. This visible effect is associated with negative stereotypes such as being aesthetically displeasing, morally and emotionally impaired, and socially handicapped.

The negative stereotypes develop from childhood. For instance, information from parents push kids to these stereotypes, teachers in kindergartens or schools pay more attention to kids who are average weight and pay less attention to the kids who are overweight, and with high body mass index children are associated with being lazy and undisciplined. All these stereotypes form the society and may cause discrimination. "Overweight among youth negatively impacts the present and future psycho and physical aspects of health". (Haug *et al.*, 2009)

An American study (Latner *et al.*, 2008) shows that weight bias is significantly stronger than other major targets of bias. The authors come to the conclusion that discriminating

obese subjects may be more socially acceptable than discriminating other groups (homosexuals and ethnic minorities). There is little legal resource available to combat weight bias. Other groups have legal deterrents which protect them in the USA. Probably participants in this survey wanted to be more “politically correct” against other target groups, thus for overweight individuals discrimination appeared to be more acceptable.

In the USA the prevalence of obesity population is very high, approximately two-thirds of Americans are now overweight or obese (Puhl & Heuer, 2011). Americans still do not have laws to prohibit weight discrimination. So, the current situation results in an American society where it is not illegal to discriminate against a person because of his overweight. It means that employers have juridical rights to discriminate against job applicants and employees on the basis of their weight. There are many obese Americans who experience weight discrimination at the workplace and they do not have viable means to seek legal resource for protection. In the USA it is only the state of Michigan as well as a few other localities such as San Francisco, Santa Cruz and the District of Columbia which have enacted legislation to prohibit weight discrimination.

Nicole H.F. Cossrow *et al.* (2001) investigated understanding weight stigmatization in her focus group study. The results of this study indicated that participants experienced weight-based stigmatization in many aspects of their lives. For instance, one male uttered: *“I think there is a general perception that overweight equates to being lazy, which I think is part of viewing you differently or poorly without knowing you at all. They have already decided that you are a lazy person just because you are a heavier person”*. Family members’ negative attitude as well as poor treatment often lead to situations where overweight individuals feel they are being discriminated and hurt by their closest people. A participant reported that her grandmother often said: *“Well you better not eat that! You will never get a husband!”*. The same situation is observed in the social environment: a woman reported the weight-related mistreatment from her friend: *“When I was younger, my best friend didn’t have me in her wedding because I was fat. She kept making all sorts of excuses and I nailed her down later and it was because I was so big, she didn’t want me in the wedding”* She stated that her friend explained *“It wouldn’t be the ideal picture”*.

There are some common stereotypes about the overweight population being of less socio-economic status, may have a problem with sexual intercourse, they are harder to get married, have fewer children, are not desirable as adoptive parents, are an increased likelihood of

developing depression and are less favored as friends by adults. The other side of the present moral is that the society is encouraging the wicked. Society puts pressure on people, forcing them to strive for the ideal, to have a perfect body, and it gives a feeling of inadequacy and inequality.

Overweight females are portrayed as objects of humor and are less likely to be portrayed in romantic relationships. Particularly, this affects women more, as women with high BMI are less likely to be married. The study by Chen and Brown (2005) examined overweight stigma by looking at the relationship between overweight and adults' preferences for sexual partners as opposed to friendship. The result of this study shows that the least-preferred partners were with high BMI. Compared to women, men had significantly lower ranks for partners with high BMI. The authors suggest that in socio-cultural perspectives, attitudes toward the overweight and obese have to change by making it illegal to discriminate people on the basis of weight in employment and educational situations, and treating obesity stigma like racism or sexism.

Recently, a study in France (Bajos *et al.*, 2010) showed that overweight women were less likely to have a sexual partner in the past 12 months than normal weight women. The situation turns out to be the same for men, they were less likely to report more than one sexual partner in the same period. The authors state in their conclusion that there is a link between BMI and sexual behavior and adverse sexual health outcomes. It can be caused by the stigma of being overweight which leads to less sexual relations. The authors suggested that healthcare professionals need to be aware of sensitivities related to weight and gender in the provision of sexual health services.

Public support is a key to enacting legislation in the USA. The study performed by Puhl, Heuer and Sarda (2010) reported that gender differences were observed across experimental conditions indicating that some messages may increase support for certain laws among women, but not men. "Obese women experience greater weight-related stigma and discrimination and are at greater risk for development of depression", (Azarbad & Gonder-Frederik, 2010). As it was mentioned above, women are predicted to be more discriminated due to overweight and the result of this study gives a suggestion that women have more sensitive mentality about their overweight issues.

Overweight is often illustrated in the media as an issue of personal responsibility, subjects with high BMI are blamed for their weight and a good body image is strongly recommend

from the mass media. The media focus can influence the high level of depression among overweight and obese individuals. A study made by Australian researchers Thomson *et al.* (2009) demonstrated that dietary restriction had benefits for improving depression and HRQOL (Health-related quality of life) scores among overweight and obese women. Another study which was performed on elderly Koreans showed that obese elderly women were less likely to suffer from depressive symptoms compared to people with normal weight, (Kim *et al.*, 2009). The results of these studies gave me an opportunity to set up a hypothesis that there is a link between BMI and depression in Norway.

The overweight participants of the study by Nicole H.F. Cossrow *et al.*, (2001) mentioned being given a different or poor attitude in work related situations, generally pertained to job interviews and negative experiences with coworkers. One woman described her experience with a job interview: *"I went on a job interview and this is about 3 years ago where the guy right in front of me (the interviewer), right at the beginning of the interview, he wrote "TOO FAT!" on the form that he had in front of him"*.

Many studies affirm that heavy women may face discrimination by the employer, particularly in the early stage of their careers. Some employers tend to frequently attribute the positive social characteristics to the attractive female employees, including cooperativeness, intelligence and competence, (Glass, Haas, & Reither, 2010).

According to the report of the International Labor Office on "Discrimination at work in Europe", "Lifestyle, whether an individual leads a "healthy" life, is becoming a factor in obtaining or keeping a job. Being overweight can be an occupational disadvantage in several industrialized countries. One key aspect of the principle of non-discrimination and equality at work is that all employment decisions must be based on a person's capacity to perform a job. Denying a job or dismissing qualified persons solely on the basis of their obesity would amount to discrimination and constitute an undue intrusion in their private life." (Discrimination at work in Europe).

Kelly Brownell and Rebecca Puhl (2003) describe in their study that clear discrimination against overweight people has been documented in three main areas: education, health care and employment. The authors state that the main reason for this appears to be very strong anti-fat attitudes. They suggest that society should pay attention to specific ways biases manifest, including subtle ways such as the size of the chairs in waiting rooms and the treatment gowns that aren't large enough or care providers who have negative or ambivalent

attitudes. “As a society, our goal must be to provide the same level of care for overweight people that others receive. To do so, we must also be attentive to the special needs of this population...”

As a conclusion, discrimination against overweight subjects seem to be a problem all over the developed world. Our society has to make much more efforts in decreasing such biases and stereotypes which begets to discrimination of the overweight individuals. This group of the population is a target for bad attitude. Thus, the social, legal and legislative issues has to be paid more attention to.

3. DESCRIPTION OF THE SITUATION IN NORWAY.

A recently made research survey reported that overweight and obesity has been an increasing concern in Norway during the last 20-30 years. The increase in prevalence of overweight among adults is weaker than before. The overweight and obesity is a major challenge for future public health. (Norwegian Institute of Public Health, 2011). Sigrid Bjørnelv *et al.* (2007) notes in her study that there is extended dispersion in the BMI-distribution from 1966-69 to 1995-97 in adolescents in Norway. The same trends and increasing average weight in the last 30 years among Norwegian children are demonstrated in another study by Juliusson *et al.* (2007). This tendency of increasing weight has to be paid more attention to by the health institutes and government special organizations. According to the Norwegian Law the discrimination of overweight people is forbidden and all people are equal. (NOU 2009:14 Norges Offentlige Utredninger)

3.1. High Body Mass Index and overweight in Norway. Fact sheets.

According to the Norwegian Institute of Public Health (Folkehelseinstituttet), over half of the adult men are overweight and obese in Norway. The situation in women is the same, except for the 30 year-olds where the proportion is somewhat lower. (Norwegian Institute of Public Health, 2009).

Table 3.1.1: Proportion of underweight, normal weight, overweight and obesity in five counties in Norway. Year 2000-2003.

Weight classification		Underweight	Normal weight	Overweight	Obese
Gender	Age				
Men	30 yrs	0.3	46.3	42.3	11.1
	40+45 yrs	0.5	36.2	49.0	14.4
	60 yrs	0.0	29.0	53.5	17.5
	75 yrs	0.6	35.0	51.7	12.8

Women	30 yrs	2.4	65.7	22.8	9.1
	40+45 yrs	1.5	55.5	29.5	13.5
	60 yrs	1.0	47.1	34.8	17.1
	75 yrs	2.0	40.9	39.5	17.6

In figure 3.1.1 (see below) we can see that the proportion of overweight and obesity varies between counties in the 40-45 year age group among men and women. In Oslo the average BMI and proportion of overweight and obesity is lower than in the other 4 counties. (Norwegian Institute of Public Health, 2009)

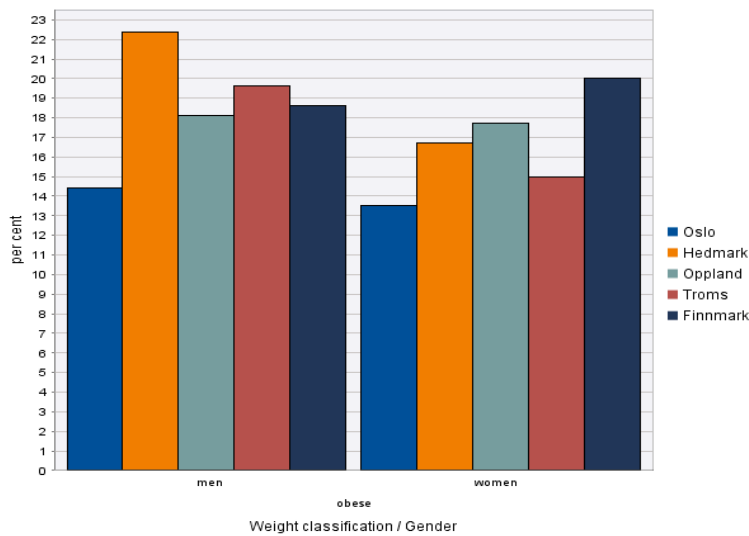


Figure 3.1.1: Percentage of 40-45 years old with obesity in five counties 2000-2003. Men and women.

The lower proportion of obesity in Oslo, may be explained by a higher educational and family income level, as there are higher in Oslo compared to the other four counties. This assumption is confirmed by Grøholt, Stigum, & Nordhagen, (2008). The odds of being overweight and obese was about 1.3 – 1.5 times higher among adolescents living in families with poorer economy compared to individuals living in families with good or excellent economy.

3.2 Does prejudice against people with high BMI lead to discrimination in Norway and the Nordic countries?

In this chapter I would review some scientific articles and newspapers articles concerning overweight in Norway. Due to lack of Norwegian papers on the subject, I will also refer to papers from the Nordic countries.

In the present time, overweight is stigmatized even in highly economically developed countries such as Norway. A study performed by Malterud and Ulriksen (2007) demonstrates how overweight people are being exposed to stigmatization in Norwegian newspapers. The authors describe the results of their study within two main normative domains. First is an aesthetic point of view, weight increase - reduced attractiveness. Second is a lack of control, consequently a lack of responsibility and bad health. Overweight individuals are shown as undisciplined and greedy subjects who should be ashamed.

Cultural attitude appeals systematically to the physical attractiveness, suggesting that overweight people are ugly and unhappy, hinting at the relations between weight and successful lifestyle. This frame settled opinions about “body image”. Even from a historical perspective, Norwegians has stable view on the Norwegian ideals and values. Thus, overweight is the result of lack of control, responsibility and personal discipline. These values are still alive in Norwegian culture. For instance, (Malterud & Ulriksen, 2010) Roald Amundsen – the first person who reached the South Pole - he accomplished extremely demanding expeditions that included high level of personal discipline and level responsibility. This became a cultural virtue, almost a definition of being an adult Norwegian. These values became also the normative foundation of the Norwegian culture; it can give us a better understanding of the impact of the blame in the Norwegian newspapers against the overweight target group and the cultural stigma that can lead to the bias of discrimination. “No wonder Norwegians fear fatness more than anything else!” (Malterud & Ulriksen, 2010).

Table 3.2.1 Hallmarks and average daily number of copies of the Norwegian newspapers used as data sources in a qualitative study of normative newspaper messages on obesity and health by Kirsti Malterud & Kjersti Ulriksen (2007).

Name and abbreviation of newspapers	Average daily number of copies	Hallmarks
Verdens Gang (VG)	309 610	Norway's biggest newspaper. Sale of single copies
Aftenposten	250 179	Norway's second biggest newspaper. Biggest subscription newspaper.
Dagbladet	135 611	Norway's biggest culture radical newspaper. Focusing lifestyle and health. Sale of single copies.
Bergens Tidende (BT)	87 668	Most dominating newspaper in the Western part of Norway.
Bergensavisen (BA)	29 311	Local newspaper for Norway's second biggest city, covering a less extensive area than BT.
Population in Norway	4 704 573	

The study was done in 2007 and as we can see from the table 3.2.1 they analyzed the main Norwegian newspapers that have the highest account daily number of copies.

Stigma occurs in employment, education, health facilities, social contacts and activities and depression. To make people think about the pandemic problem about overweight should be one of the main priorities of the government. For instance, to form an attitude that overweight people are as normal as other people, and that avoiding the social contacts with this group of people is unnecessary. The Directorate of Health published an article "Obesity and inactivity – among our greatest health challenges" (Overvekt og inaktivitet – blant våre største helseutfordringer) 15th of February 2011: "In order to work with overweight and inactivity, it is essential to meet the individual with understanding and respect. It is an important role for health services to avoid the stigma and contribute to self-mastery," said Deputy of the Health Director Bjørn Guldvog.

A wide-know association as high weight - high prevalence is to have common mental disorders, such as depression. In the concluding part of the cross-sectional study by A.C. Rivenes *et al.* (2009) where 65 648 adults between 20 and 89 years old participated, one finds a statement that the abdominal fat distribution appears to be a key mediator in the relationship between obesity and depression.

The leader of the Norwegian Union of Overweight (Landsforening for Overvektige), Jørgen Foss, mentioned in his interview in VG (04.10.2010) that he had experienced to be bullied, especially amid his school years. He added that those feelings he got while being bullied were still fresh in his memory. He also asserted that he planned to start a special organization whose duty would be work at schools against the bullying of overweight children and which would co-operate closely with Antiracism center. It demonstrates how hard it is to be overweight and that personal experience is a fundament for a struggle against prejudices and biases' opinions.

Another real life-based fact is that a fisherman named Ronny Haugland was close to lose his job because he was overweight or had high BMI. His company accepted new rules for the employees, so if a person's BMI was more than 35, then he was not allowed to work at sea. The first episode of this documentary series "Lyst og Last – på helsa løs" was shown on the Norwegian TV channel "TV 2", 8th of May 2008.

Education is often used as a main measure of social status. High educational achievement, influences which occupation might be chosen in the future life and, consequently, the eventual income. A cohort study performed in Sweden (Karnehed N. , Rasmussen, Hemmingsson, & Tynelius, 2006) with more than 700 000 Swedish men shows that there is a link between high BMI and attaining a high education among young men. Discrimination against overweight subjects in educational institutes might lead to lower attained education. Some teachers are strongly convinced that overweight equals low self control and give credibility to the idea that overweight children are more emotional and less likely to obtain good results in school. Thus teachers have possibly less expectations from high BMI pupils and as such, do not stimulate the interest in the study process as much as they stimulate the interest in normal-weight pupils. The number of obese men graduated is even smaller. This might be an indicator that discrimination takes place in universities of Sweden.

Another Swedish large population-based analysis by Hansson *et al.* (2010) also reported that obesity was highly stigmatizing and that overweight subjects were more likely discriminated in different aspects of life such as private life, workplace, healthcare and interpersonal life compared with individuals of normal weight. However, they found that the associations varied according to gender and socioeconomic position.

Many studies have reported that unfavourable relationships between overweight and labor-market outcomes is larger for women than for men. However, a study from Iceland

performed by Asgeirsdottir (2010) reported that there is just a slight negative relationship between weight and the employment rate for women, but at the same time a slight positive relationship for men. Iceland is the first country in the world where a woman was elected for president by the population. It may give indications and gender-blind labour market in Iceland. A study from Denmark made by Greve (2008), where aim was to find the relationship between BMI, employment status and wages, reported that there was a significant negative effect on wages in the private sector for women, but no significant effect on wages in the public sector for both genders in Denmark. Also research from Finland performed by Sarlio-Lahteenkorva (1999) demonstrated the strong negative associations between the high body weight and the social position. For obese women particularly it is a big social and economic disadvantage in Finland. Another survey performed also by Sarlio-Lahteenkorva *et al.* (2005) reported that non-married women in Denmark were more likely to be obese than their married counterparts.

We can see that the situation in all Nordic countries tends to be the same, except for Iceland, where just a slight effect of the relationship between BMI and labor market discrimination is reported.

4. DATA AND METHODOLOGY

Data was provided by SSB¹ "Level of living 2008 - Cross sectional study - Health" (Samordnet levekårsundersøkelse 2008 - Tversnitt Tema: Helse). The main topic of the Level of Living Survey 2008 is health issues such as: symptoms of health problems, functional ability, living habits, use of health services care and social contact.

This survey also covered some other issues such as: civil status; work position; social contacts and activities; violence and threat; discrimination; gender, weight and height, which give us opportunity to calculate the BMI as outcome.

4.1. Data

Statistics Norway (SSB) conducts different surveys of people's living conditions every year. In 2008 SSB held the survey "Level of living 2008 – Cross sectional study – Health" (Samordnet levekårsundersøkelse 2008 – Tversnitt Tema: Helse). It provides useful knowledge about living conditions. The survey was conducted with purpose to denote the health status of the population and to compare lifestyle areas for different population groups. It helps researchers to obtain some new information about how the Norwegian population is living nowadays and its eventual developments. SSB publishes the circle of the surveys almost every three years. The previous surveys within the health area took place in 2005, 2002 and 1998.

All individuals were originally set up for phone or face-to-face interviews, and in addition they were sent a questionnaire by post. Average interview time was 36, 2 minutes.

Every person who completed the interview and self-completion questionnaire was participating in the draw for two gift certificates worth NOK 10 000 (approximately 1 250 Euro) and ten gift certificates for NOK 1000 (approximately 125 Euro) for participation in this survey.

¹ "Some of the data applied in the analysis in this publication are based on "Level of living 2008 - Cross sectional study - Health". The survey was financed by the Norwegian Directorate of Health, University of Oslo, Ministry of Children and Equality, the National Centre for Documentation on Disability, and the National Research Center in Complementary and Alternative Medicine. The data are provided by Statistics Norway, and prepared and made available by the Norwegian Social Science Data Services (NSD). Neither Statistics Norway, the Norwegian Directorate of Health, University of Oslo, Ministry of Children and Equality, the National Centre for Documentation on Disability, or The National Research Center in Complementary and Alternative Medicine nor NSD are responsible for the analysis/interpretation of the data presented here.

4.1.1 Data collection

Samples of 10 000 persons were selected for the survey by BEBAS (the central demography/population database in Statistics Norway), from the age of 16 years.

The survey is made in such a manner that data gathering can be carried through by face-to-face interviews. The sample is therefore drawn for face-to-face interviews and SSB's two phases sampling plan was employed.

Consequently, the country is divided into a set of sampling areas that are then grouped in 109 strata. The sampling areas are municipalities or groups of municipalities. Municipalities with low population are merged with other municipalities, so that all sampling areas have at least 7 per cent of the total population in the strata that the area belongs to. In some cases, small municipalities that are close to populous municipalities have been merged into one area. All municipalities that have more than 30 000 inhabitants and some municipalities that have between 25 000 and 30 000 inhabitants are defined as separate strata. The other sampling areas are stratified within each county after business structure, population density, centrality, commuting- and trade patterns, media coverage and communication. In the first step, a sampling area is drawn from each strata. The areas that constitute separate strata are drawn with 100 per cent probability. The rest is drawn with a probability that is proportional to the population in the sampling area. In the second step, the sample is drawn by chance from the 109 sampling areas. The sampling in the second step is carried through in such a manner that the sample is self-weighting when both steps are seen in coherence. (www.nsd.no)

The data gathering was carried through as a combination of face-to-face interviews and self-completion questionnaires. Interviews were carried through with the persons in the net sample and questionnaires were sent to the gross sample.

4.1.2 Missing data

From the sample of 10 000 individuals, 316 subjects were classified as retirees, thus 9684 participants were included to the survey, 3219 of which did not respond. See the table 4.1.2.1 below.

Table 4.1.2.1 Retirement after causes

	Total persons	Percent	Percent
Gross sample:	9684	96,84%	100%
Net sample	6465	64,65%	66,8%
No response	3219	32,19	33,2%
Total retirees:	316	3,16%	100%
Respondents (died)	46	0,46%	15%
Respondents (living abroad), minimum 6 months	139	1,39%	44%
Respondents (living in the health institutes)	131	1,31%	41%
In Total:	10 000	100%	

4.2. Variables and methods

In this chapter I will describe the independent variables, which I used in the analysis. In order to make it more visible I set up all the variables in one table and divide them into topic groups, such civil status, background variables, work, mental health, physical discrimination, discrimination and social life, see appendix II.

This study was not set up to examine overweight and discrimination consequences. It was conducted by SSB to examine the living conditions and health issues, as mentioned above. However, it includes variables that enable to see if there is correlation between BMI and

civil status, work, health, physical discrimination, discrimination in other areas and social life. These are the areas focused on in the literature review.

It is important to note that difficult to conclude anything about causal relationships from these cross-sectional data. The question of causality is difficult in these types of studies anyway. For instance, high BMI may cause depression, which may again lead to higher BMI. Another example is Hunte (2011) use the waist circumference as a measure for perceived interpersonal everyday discrimination. The author suggests in his conclusion that perceived interpersonal everyday discrimination might be associated with an increase in waist circumference over time among adults in the United States. Hence, BMI is the independent variable in this study, indicating that the relationship can go in both directions. As a fact it is too complicated to find the causal relationship given the present data, but it is still is interesting to look at correlations. Correlations indicate which “non-beneficial” factors are associated with increasing BMI.

4.2.1. Further description of the research hypotheses

In my analysis I used 40 different variables that were divided into 7 subgroups, namely:

1. BMI and civil status (includes 1 variable)
2. Background variables (includes 2 variables)
3. BMI and work variables (includes 5 variables)
4. BMI and mental health variables (includes 9 variables)
5. BMI and physical discrimination variables (includes 2 variables)
6. BMI and discrimination variables (includes 2 variables)
7. BMI and social life variables (includes 19 variables).

More details about my subgroups variables are as follows: First subgroup is BMI and civil status; my hypothesis is that being single is associated with a higher BMI. This subgroup includes one variable, civil status. The second subgroup is background, including the two variables gender and age. Here I will study if gender and age group is associated with BMI. According to the table 3.1.1, males tend to be more overweight than females. Third subgroup, BMI and work, includes seven variables, see appendix II. The hypothesis is that being unemployment is associated with an increase in BMI and gives less opportunity to work in private sector; the exception is the case when a person is running his/her own

business. Certain studies suggest that work discrimination is more prevalent in private sector than in state organizations, (e.g. Greve, 2008). Forth subgroup is BMI and mental health and includes nine variables, see appendix II. The hypothesis is that having mental health problems is associated with an increase in BMI. Fifth subgroup is BMI and psychical discrimination; it includes two variables, see appendix II. The hypothesis is that being subjected to violence and threat is associated with an increase in BMI. Sixth subgroup is BMI and discrimination, includes two variables, see appendix II. The hypothesis is that being discriminated due to the health problems or other problems is associated with an increase in BMI. Finally, the seventh subgroup is BMI and social life, includes nineteen variables, see appendix II. The aim is to explore if having less social contacts and less participation in cultural activities is associated with an increase in BMI. All these hypotheses are of interest to me for examination in my analysis. I would like to find out if all these weight-based stereotypes are true or not in Norwegian society.

In summary, I would like to study whether BMI is correlated to:

1. Civil status
2. Gender
3. Employment
4. Physical and health mental
5. Physical discrimination
6. Health / other discrimination
7. Social life

4.2.2. Statistical analysis

First, a simple linear regression was conducted to all variables to see which ones were most significantly correlated to BMI. Data was analyzed in PASW Statistics, version 18, (formerly SPSS). The variables included categories for don't know/don't want to answer. These were treated as missing in the analysis. However, there was very little missing of the variables, see appendix III.

Having estimated simple linear regressions for each separate independent variable, I proceeded to estimate a multiple regression, thus investigating the effect of all independent variables together. As the number of independent variables is high, possibly leading to a multivariate model, which is difficult to interpret and only allowed variables with p-values less than 20% in the multiple model. This is an exploratory approach used to identify the most significant variables in these data. A different data set might yield a different model. This resulted in the model shown in table 5.4.

In addition, I also tried a second multivariable analysis, with some interactions based on findings mentioned in the literature reviews in section 2.2 and 3.2:

- Civil status x gender (Chen & Brown, 2005), (Bajos *et al.*, 2010)
- Unemployment x gender (Glass *et al.*, 2010), (Asgeirsdottir, 2010)
- Depression x gender (Kim *et al.*, 2009), (Rivenes *et al.*, 2009)

5. RESULTS

Tables 5.1 Descriptive statistics for BMI, 5.2 Descriptive statistics for gender, 5.3 Descriptive statistics for age groups below provide a quantitative description of BMI in the data.

Table 5.1: Descriptive statistics for BMI.

	N	Minimum	Maximum	Mean	Std. Deviation
Body Mass Index	6311	10.5	57.1	25.0	4.0
Valid N	6311				

Table 5.2: Descriptive statistics for gender.

	N	Minimum	Maximum	Mean	Std. Deviation
Women	3165	11.8	56.1	24.3	4.1
Men	3146	10.5	57.1	25.7	3.6
Valid N	6311				

Table 5.3: Descriptive statistics for age groups.

Age group	N	Minimum	Maximum	Mean	Std. Deviation
16-24 y.o.	873	10.5	57.1	22.9	3.6
25-44 y.o.	2173	15.2	56.8	25.2	4.1
45-66 y.o.	2341	11.8	52.1	25.6	3.8
67-79 y.o.	648	16.4	41.8	25.3	3.5
80-y.o.	276	14.9	43.3	24.3	3.7
Valid N	6311				

Here hypotheses are specified as statistical null hypotheses:

Hypothesis I: Civil status is not associated with BMI.

First subgroup includes 1 variable: “civil status”. A simple linear regression of the following form was estimated:

$$\text{Where BMI} = \alpha + \beta_1 \times D_1 + \beta_2 \times D_2 + \beta_3 \times D_3 + \beta_4 \times D_4 + \varepsilon,$$

The following describes the dummy variables:

- D_1 : Set to 1 if Sivstat = “single”; set to 0 otherwise
- D_2 : Set to 1 if Sivstat is “widow(er)”, set to 0 otherwise
- D_3 : Set to 1 if Sivstat is “separated”, set to 0 otherwise
- D_4 : Set to 1 if Sivstat is “divorced”, set to 0 otherwise.

The intercept α corresponds to Sivstat = “married”, which is modeled as being the baseline.

The results indicate the following findings: There is a statistically significant relationship between the civil status of a person and his BMI, as some of the dummy variables prove highly significant. In particular, married people or those living with a partner, tend to have the highest BMI. This is suggested by the fact that all dummy variables have a negative regression coefficient compared to the baseline. The intercept (corresponding to the Sivstat = “married”) and D_1 (corresponding to Sivstat = “single”) have p-values below 1% indicating the high statistical significance of these variables. In contrast, other dummy variables, namely D_3 and D_4 , appear to be insignificant. The conclusion that one can draw from these results is that married people (BMI – 25,5) tend to have higher BMI compared to single people (BMI – 24,4), while other civil statuses, such a “separated”, “divorced” do not have any significant impact on BMI, see appendix III. It means that our research hypothesis is not associated with BMI.

Hypothesis II: Gender is not associated with BMI.

The second subgroup includes 2 variables, namely: “Gender “and “Age group”. “Gender” is a significant variable. Men are having higher BMI then women; (BMI is 25,8 for men and 24,3 for women). That suggests a confirmation of our research hypothesis. Being a male is associated with an increase in BMI.

“Age group” includes 5 coded values: 16-24 y.o.; 25-44 y.o.; 45-66 y.o.; 66–79 y.o.; over 80 y.o. All coded values appear significant compared to the baseline of 25-44 y.o., with the exception of coded value 66–79 y.o., which is insignificant.

Hypothesis III a): Being unemployed is not associated with BMI.

The third subgroup (a) includes 4 variables, namely: “Receiving disability pension”, “Unemployed for the past three months”, “Payment at least for 1 hour last week”, and “Other people working under your leadership”.

The results show that the variable “Receiving disability pension” is highly significant (p-value < 1%). Thus it has a significant impact on BMI. In particular, those people who do not receive disability pension tend to have higher BMI (26,2) than those receiving disability pension (24,9). The variable “Unemployed for the past three months” is in line with this finding; in particular those people who are working tend to be overweight (25,1). “Payment at least for 1 hour last week” and “Other people working under your leadership” variables also appear highly significant with p-values < 1% (25,1 and 26,6 respectively). This would also suggest that the stereotype that overweight people do not achieve leader position also seems false. This finding is the opposite of our research hypothesis.

Hypothesis III b): A person’s possibility to be employed in the private sector is not influenced by the BMI.

The third subgroup (b) includes 1 variable: “Person employed by”. The six coded values are:

- Privately owned company (baseline)
- Privately owned entity (corporations included)
- City/municipality owned entity
- County owned entity
- State owned entity
- Unemployed.

The variable “Person employed by” with 6 coded values does not appear to have statistical significance, see appendix III. The result shows that BMI does not seem to influence a person’s opportunity to work in private sector.

Hypothesis IV: Health and mental problems are not associated with BMI.

The fourth subgroup includes 9 variables:

- “How would you rate your own health state?” – coded as 5 values
- “Breathing problems for the last 3 months”
- “Problems with anxiety or phobias for the last 3 months”
- “Depressed for the last 3 months”
- “Irritable or aggressive for the last 3 months”
- “Concentration difficulties for the last 3 months”
- “Sleep problems for the last 3 months”
- “Being tired for the last 3 months”
- “Visited a psychologist for the last 12 months”.

Only two variables are highly significant (p -value $< 1\%$) from this subgroup; “How would you rate your own health state?” and “Breathing problems for the last 3 months”. Other variables are insignificant, see appendix III. That suggests that mental problems are not associated with BMI.

Hypothesis V: Being subjected to violence and threat is not associated with BMI.

The fifth subgroup includes 2 variables: “Subjected to violence for the last 12 months” and “Subjected to threat for the last 12 months”. These variables are significant, see appendix III. Our findings show us that those people having the highest BMI do not tend to be subjected to violence (24,4) and threat (24,2) vs. those people who tend to be subjected to violence (23,8) and threat (23,4). This is the opposite result compared to our research hypothesis. Being subjected to violence and threat is associated with a decrease in BMI.

Hypothesis VI. Being discriminated due to the health problems or other problems are not associated with BMI.

The sixth subgroup includes 2 variables, namely are: “Being discriminated due to the health problems, diseases, injury” and “Being discriminated due to the other reasons”. These two variables appear insignificant, see appendix III. This does not confirm our research hypothesis that discrimination is associated with an increase in BMI.

Hypothesis VII: Having less social contacts and less participating in the cultural activities is not associated with BMI.

The seventh subgroup includes 19 variables.

The results show that thirteen variables are significant, see appendix III. Many variables associated with an increase in BMI, such as: “Do you have any good friends living close to you?” (24,9), “Do you participate in any sport activities?”, “Do you participate in any cultural activities (cinema, theater, opera, concert, museum)?”, “Do you go to café, restaurant or bar?”. Six variables are insignificant. This finding is in line with our research hypothesis. Having less social contacts and less participating in the cultural activities is associated with an increase in BMI.

As I mentioned above, having estimated simple linear regressions for each separate independent variable, I proceeded to estimate a multiple regression. I used only those variables that were found significant in the simple regression analysis. The rest of the variables were excluded. The result of the multiple regression analysis, which includes 20 different variables, with p-values below 20%, is shown in table 5.4.

Table 5.4: The results of the multiple regression analysis.

Variable	Regression coefficient	P-value	95 % Confidence Interval for regression coefficient	
			Lower Bound	Upper Bound
(Constant)	23.3	.00	21.8	24.8
Age Group 66-79 y.o.	-.0	.83	-.42	.34
Age Group Over 80 y.o.	-1.2	.00	-1.8	-.6
Gender Man	1.4	.00	1.2	1.6
Civil Status Single	-.9	.00	-1.1	-.7
Civil Status Widow/widower	.4	.16	-.14	.84

Variable	Regression coefficient	P-value	95 % Confidence Interval for regression coefficient	
			Lower Bound	Upper Bound
Civil Status Separated	-9	.04	-1.85	-.03
Civil Status Divorced	-.4	.04	-.74	-.02
Not receiving disability pension	.8	.00	.35	1.15
Not unemployed for the past three months	.9	.01	.2	1.5
Not other people working under your leadership	-.6	.00	-.9	-.3
Payment at least for 1 hour last week	-.5	.00	-.8	-.2
Health State Good	1.0	.00	.8	1.2
Health State Neither good nor bad	1.6	.00	1.3	1.9
Health State Bad	1.5	.00	1.0	2.0
Health State Very Bad	1.6	.00	.6	2.6
Not having breathing problems for the last 3 months	-.7	.00	-1.0	-.3
Not subjected to threat for the last 12 months	.7	.02	.1	1.2
Not having good friends living in other places	-.4	.04	-.7	-.02

Variable	Regression coefficient	P-value	95 % Confidence Interval for regression coefficient	
			Lower Bound	Upper Bound
Leaving home less than 1 time per week	-1.5	.04	-2.92	-.08
Not participating in any sport activities	.4	.00	.13	.55
Not participating in any cultural activities (cinema, theater, opera, concert, and museum)	.3	.01	.09	.51

Dependent Variable: Body Mass Index

From the multivariable analysis, we can see which variables are the most associated with BMI. For instance, being male (variable “gender man” – is highly significant), being widow(er) is associated with higher BMI compare to being single/separated/divorced, own valuation of the health state (variables: “Neither good nor bad”, “Bad” and “Very bad”) is associated with higher BMI. Employment variables such as “Not receiving disability pension” and “Not unemployed for the past three months” are also associated with higher BMI, as well as some variables, which describes social activities (variables: “Not participating in any sport activities” and “Not participating in any cultural activities”).

I also studied whether there were interactions effects between gender and civil status, unemployment and depression. However, none of the interactions were significant, (results not shown).

6. DISCUSSION

Our goal in conducting this study was to find out if there is a correlation between BMI as the outcome and independent variables such as civil status, work, social activities, mental health and feeling of discrimination. The results of the survey indicate that being a male is associated with an increase in BMI, being subjected to violence and threat is associated with a decrease in BMI, whereas having poor valuation of own health, less social contacts and less participating in the cultural activities is associated with an increase in BMI. These findings should be seen against the limitations of the study.

The design was not optimal, as I mentioned in section 4.2 this survey was not specifically set up to examine BMI and the areas in the research hypotheses. This study was conducted by SBB to examine the living condition and health issues. But it includes variables that indirectly enable me to study if there is correlation between BMI and civil status, BMI and work, BMI and mental health, BMI and physical discrimination, BMI and discrimination, BMI and social life but not study of the casual effects.

The response rate was high fairly, 66, 8% (see table 4.1.2.1). The study yields low opportunity to analyze selection bias because the survey was anonymous. We do not have any information on the nationality of the respondents. Phone respondents may exhibit more social desirability response bias and self-report bias.

According to our finding, being a male is associated with an increase in BMI. Unfortunately, World Health Organization does not divide the index formula for BMI between men and women. I suggest that probably in order to measure men`s BMI we need to use some correction coefficients. Hence, the results could be different from our findings. However, Grabner (2012, p.119) mentioned: “It is well know that BMI variables based on self-reported height and weight and those based on measurement are usually different and females consistently underreported their weight”. However, as this is a population-based study and no one knew this was about BMI, we could be able to avoid some bias in the responders` answers. BMI and negative consequences in everyday life is a difficult relationship to measure in all circumstances.

Having less social contacts and participating less in sports and social/cultural activities is associated with an increase in BMI. This could be due to people with higher BMI not wanting to take part in these activities because they feel shameful due to their BMI. However, the questionnaire also included items on whether the responders wanted to take

more part in cultural activities, and these questions showed that people answering “no” generally had higher BMI than people responding “yes” in the simple regression analyses, and the questions were not significant in the multiple regression. If people with higher BMI wanted to take more part in cultural activities, one should think that people answering “yes” to these questions had the higher BMI. Hence, a perhaps more likely explanation is that people with higher BMI lead a passive lifestyle, and are reasonably happy with that. A similar explanation might be relevant for why married people have higher BMI than singles. One possible source of bias in these questions is also that we do not know the nationality of the respondents. Perhaps some minorities are part of a culture where less social contact with friends and less participation in the social activities mentioned in the questionnaire is common. Also, there could be geographic variation in the responders’ answers to these questions.

The research hypotheses concerning the labor market seem to be false. There are no indications from the data that people with higher BMI in Norway are being discriminated in the labor market. On the contrary, people who are receiving disability benefits or have been unemployed for the past three months on average have lower BMI than people who are employed. Also, people who rarely leave their home have lower BMI than people who frequently leave their home. These findings suggest that there are other factors, e.g. illness, that are more important for being out of the labor market than shame and social stigma about BMI.

A wide-known association as high weight – high prevalence is to have common mental disorders, such as depression. In the concluding part of the cross-sectional study by Rivenes *et al.* (2009) one finds a statement that the abdominal fat distribution appears to be a key mediator in the relationship between obesity and depression. However, there are few indications from the population based data used here that individuals with higher BMI are experiencing more mental health problems. None of these variables were significant in the single or multiple regression analyses. Of course, in a study specifically comparing individuals with very high BMI to the normal population, these results may be different. However, valuating own health lower than “very good” and having breathing problems was associated with a higher BMI in both the simple and multiple analyses, indicating at least a subjective feeling of less physical health among people with higher BMI. Being subjected to threats is associated with a decrease in BMI. This finding is difficult to interpret, but goes in the opposite direction compared to the research hypothesis.

I also examined whether some interaction effects were present in the data, based on earlier findings in the literature. The study by Chen and Brown (2005) looked at the relationship between overweight and adults' preferences for sexual partners as opposed to friendship. The result of this study shows that the least-preferred partners were with high BMI. Compared to women, men had significantly lower ranks for partners with high BMI, indicating an interaction between gender and civil status. This was repeated in the study by Bajos *et al.* (2010), which showed that overweight women in France were less likely to have a sexual partner, the authors state in their conclusion that there is a link between BMI and sexual behavior. However, in our analysis we did not find any significant interaction based on the Norwegian data. Also, in the analysis of main effects in table 5.4, married individuals have higher BMI than single individuals. This may point to a more passive lifestyle among married couples. There may also be a difference between what partners people say they prefer, as in the studies mentioned above, and what partners they marry in the end.

According to Glass *et al.* (2010) many studies affirm that heavy women may face discrimination by the employer, particularly in the early stage of their careers. Some employers tend to frequently attribute the positive social characteristics to the attractive female employees, including cooperativeness, intelligence and competence. Iceland's study performed by Asgeirsdottir (2010) reported that there is just a slight negative relationship between weight and the employment rate for women, but in the same time slight positive for men. But, particularly, our data did not support these findings.

A study performed by Kim *et al.* (2009) showed that obese women in Korea were less likely suffers from depressive symptoms compared to people with normal weight, indicating an interaction between gender and depression on BMI. However, we do not have any significant results to support this finding based on our data.

Finally, neither of the two general discrimination variables showed an association to BMI in the simple or multiple analyses. In conclusion, there is no much evidence from these data that people with higher BMI have problems in everyday life in Norway.

7. CONCLUSION

The aim of this thesis was to draw the attention to the problem of overweight, especially in Norway. For that we analyzed some population based survey data obtained from the Statistics Norway (SSB).

The results of this study imply that there are certain factors associated with overweight. Some of the most important of these factors appear to be: being a male is associated with an increase in BMI, evaluating own health at less than very good and having breathing problems is associated with an increase in BMI and having less social contacts and less participation in cultural/social activities is associated with an increase in BMI.

However, the study do not support the suggestions that being single, being out of the labor market having mental problems or having a general feeling of being discriminated is associated with higher BMI. In fact, being single or being unemployed/receiving disability pension is associated with a decrease in BMI compared to being married or employed. Being subjected to threats is also associated with a decrease in BMI.

In conclusion, not much evidence from the data suggests that people with higher BMI are experiencing problems in everyday life at the population level in Norway. I will propose for further research of this problem using data specifically comparing people with very high BMI to the normal weight population that would be interest of both the people with high BMI and society in general.

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REFERANCE LIST

Asgeirsdottir, T. L. (2011). Do body weight and gender shape the work force? The case of Island. *Economics and Human Biology*, 9 , pp. 148-156.

Azarbad, L., & Gonder-Frederik, L. (2010, doi:10-1016/j.pcs.2010.01.003). Obesity in Women. *Psychiatr Clin N Am* (33) , pp. 423-440.

Bajos, N., Wellings, K., Laborde, C., & Moreau, C. (2010, 340;c2573). Sexuality and obesity, a gender perspective: results from French national random probability survey of sexual behaviours. *BMJ*, <http://www.bmj.com/content/340/bmj.c2573.full.pdf> , pp. 1-9.

Bjørnelv, S., Lydersen, S., Mykletun, A., & Holmen, T. L. (2007, doi:10.1186/1471-2458-7-279). Changes in BMI-distribution from 1966-69 to 1995-97 in adolescents. The Young-HUNT study, Norway. *BMC Public Health*, 7:279 , pp. 1-6.

Booth, W. C., Colomb, G. G., & Williams, J. M. (2008). *The Craft of Research*. Chicago: University of Chicago Press.

Brownell, K., & Puhl, R. (2003, Summer Vol.7 No. 3). Stigma and Discrimination in Weight Management and Obesity. *The Permanente Journal* .

Chen, E. Y., & Brown, M. (2005, August). Obesity Stigma in Sexual Relationships. *Obesity Research Vol. 13 No.8* , pp. 1393-1397.

Cossrow, N. H., Jeffery, R. W., & McGuire, M. T. (2001). Understanding Weight Stigmatization: A Focus Group Study. *JNE* 33 , pp. 208-214.

Crocker, J., Cornwell, B., & Major, B. (1993, Vol. 64, No.1). The Stigma of Overweight: Affective Consequences of Attributional Ambiguity. *Journal of Personality and Social Psychology* , pp. 60-70.

Glass, C. M., Haas, S. A., & Reither, E. N. (2010, June 1; 88 (4)). The Skinny on Success: Body Mass, Gender and Occupational Standing Across the Life Course. *Soc. Forces* , ss. 1777-1806.

Grabner, M., 2012. BMI Trends, Socioeconomic Status, and the Choice of Dataset. *Obesity Facts, The European Journal of Obesity*, Vol.5, pp. 112-126.

Greve, J. (2008). Obesity and labor market outcomes in Demark. *Economics and Human Biology*, 6 , pp. 350-362.

Grøholt, E.-K., Stigum, H., & Nordhagen, R. (2008, Vol.30, No. 3). Overweight and obesity among adolescents in Norway: cultural and socio-economic differences. *Journal of Public Health* , pp. 258-265.

Haug, E., Rasmussen, M., Samdal, O., Lannotti, R., Kelly, C., Borraccino, A., et al. (2009). Overweight in school-aged children and its relationship with demographic and lifestyle factors: results from the WHO-Collaborative Health Behavior in School-aged Children (HBSC) Study. *Int J Public Health* 54 , pp. 167-179.

Hunte, H. E. (2011, February). Association Between Perceived Interpersonal Everyday Discrimination and Waist Circumference Over a 9-Year Period in the Midlife Development in the United States. Cohort Study. *American Journal of Epidemiology* , pp. 1-8.

Juliusson, P., Roelants, M., Eide, G., Hauspie, R., Waaler, P., & Bjerknes, R. (2007). Overweight and obesity in Norwegian children: Secular trends in weight-for-height and skinfolds. *Acta Paediatrica*, 96 , pp. 1333-1337.

Karnehed, N., Rasmussen, F., Hemmingsson, T., & Tynelius, P. (2006, August). Obesity and Attained Education: Cohort Study of More Than 700,000 Swedish Men. *Obesity Vol.14 No. 8* , pp. 1421-1428.

Karnehed, N., Rasmussen, F., Hemmingsson, T., & Tynelius, P. (2006, August). Obesity and Attained Education: Cohort Study of More Than 700,000 Swedish Men. *Obesity Vol.14 No.8* , pp. 1421-1428.

Kim, E., Song, J. H., Hwang, J.-Y., Ahh, K., Kim, J., Koh, Y. H., et al. (2009, doi:10.106/j.archger.2009.10.014). Obesity and depressive symptoms in elderly Koreans: Evidence for the "Jolly Fat" hypothesis from the Ansan Geriatric (AGE) Study. *Archives of Gerontology and Geriatrics* , pp. 1-4.

Latner, J., O'Brien, K., Durso, L., Brinkman, L., & MacDonald, T. (2008, April). Weighing obesity stigma: the relative strength of different forms of bias. *International Journal of Obesity (32)* , pp. 1145-1152.

M.Hansson, L., Näslund, E., & Rasmussen, F. (2010). Perceived discrimination among men and women with normal weight and obesity. A population-based study from Sweden. *Scandinavian Journal of Public Health*, 38 , pp. 587-596.

Malterud, K., & Ulriksen, K. (2010, doi:10.1016/j.pec.2009.10.022). Norwegians fear fatness more than anything else" - A qualitative study of normative newspaper messages on obesity and health. *Patient Education and Counseling* 81 , pp. 47-52.

Norwegian Institute of Public Health. (2009, May). Hentet February 23, 2011 fra Norwegian Institute of Public Health (Folkehelseinstituttet) Web site:

http://www.fhi.no/eway/default.aspx?pid=238&trg=MainLeft_5976&MainArea_5811=5976:0:15,5012:1:0:0:::0:0&MainLeft_5976=5825:74991::1:5977:16:::0:0

Norwegian Institute of Public Health. (2011, March 3). Hentet March 22, 2011 fra Norwegian Institute of Public Health (Folkehelseinstituttet) Web site:

http://www.fhi.no/eway/default.aspx?pid=238&trg=MainLeft_5895&MainArea_5811=5895:0:15,4988:1:0:0:::0:0&MainLeft_5895=5825:88630::1:5896:1:::0:0

(NOU 2009 :14 Norges Offentlige Utredninger) Et helhetlig diskrimineringsvern § 12.13 Overvekt. Diskrimineringslovutvalgets utredning om en samlet diskriminerings lov, grunnlovsværn og ratifikasjon av tilleggsprotokoll nr.12 til EMK.

Puhl, R. M., & Heuer, C. A. (2011, January). Public Opinion About Laws to Prohibit Weight Discrimination in the United States. *Obesity Vol.19 No.1* , pp. 74-82.

Puhl, R., & Brownell, K. D. (2001, December). Bias, Discrimination, and Obesity. *Obesity Research Vol.9 No.12* , pp. 788-805.

Puhl, R., Heuer, C., & Sarda, V. (2010, September 7). Framing messages about weight discrimination: impact on public support for legislation. *International Journal of Obesity advance online publication* , pp. 1-10.

Rivenes, A. C., Harvey, S. B., & Mykletun, A. (2009). The relationship between abdominal fat, obesity and common disorders: Results from the NUTH Study. *Journal of Psychosomatic Research* , 66 , pp. 269-275.

Sarlio-Lahteenkorva, S., & Lahelma, E. (1999). The association of body mass index with the social and economic disadvantage in women and men. *International Journal of Epidemiology*, 28 , pp. 445-449.

Sarlio-Lahteenkorva, S., Lissau, I., & Lahelma, E. (2005). The social patterning of relative body weight and obesity in Denmark and Finland. *European Journal of Public Health*, Vol. 16, pp. 36-40.

Thomson, R. L., Buckley, J. D., Lim, S. S., Noakes, M., Clifton, P. M., Norman, R. J., et al. (2009, doi:10.1016/j.fertnstert.2009.11.001). Lifestyle management improves quality of life and depression of life and depression in overweight and obese women with polycystic ovary syndrome. *Fertility and Sterility* , pp. 1-5.

World Health Organization Regional Office for Europe. (2008, May 26). Accessed January 10, 2011 fra World Health Organization: <http://www.euro.who.int/obesity>

World Health Organization Regional Office for Europe. (2009, January 04). Accessed Januar 10, 2011 fra World Health Organization: <http://www.euro.who.int/obesity>

Appendix I. Percentage of face-to-face and telephone interviews by gender and age.

	Phone interview (%)	Phone interview (n)	Face-to- face interview (%)	Face-to- face interview (n)	Total individuals (%)	Total individuals (n)
Total	82	<i>5 301</i>	18	<i>1 164</i>	100	6 465
Gender						
Man	83	<i>2 633</i>	17	<i>539</i>	100	3 172
Woman	81	<i>2 667</i>	19	<i>626</i>	100	3 293
Age						
16-25 y.o.	85	<i>760</i>	15	<i>134</i>	100	<i>894</i>
25-44 y.o.	82	<i>1822</i>	18	<i>400</i>	100	<i>2 222</i>
45-66 y.o	83	<i>1989</i>	17	<i>407</i>	100	<i>2 396</i>
67-79 y.o	78	<i>518</i>	22	<i>147</i>	100	<i>665</i>
Over 80 y.o	64	<i>184</i>	36	<i>104</i>	100	<i>288</i>

Appendix II. Description of the variables.

N.	Short names of the variables in original data	Variable	Coding
I. BMI and civil status			
1.	Sivstat	Civil Status	1. Single 2. Married, cohabitant 3. Widow/widower/survivor 4. Separated 5. Divorced partner 8. Don't want to answer 9. Don't know
II. Background variables			
2.	Olkjonn	Gender	1. Man 2. Woman 8. Don't want to answer 9. Don't know
3.	AldGrupp	Age group	1. 16-24 y.o 2. 25-44 y.o 3. 45-66 y.o 4. 66-79 y.o 5. over 80 y.o 8. Don't want to answer 9. Don't know

N.	Short names of the variables in original data	Variable	Coding
III. BMI and work variables			
4.	Bakgr_4	Receiving disability pension	1. Yes 2. No 7. Don't want to answer 9. Don't know
5.	Bakgr_7	Unemployed for the past three months	1. Yes 2. No 8. Don't want to answer 9. Don't know
6.	Arbeid1a	Payment at least for 1 hour last week	1. Yes 2. No 8. Don't want to answer 9. Don't know
7.	Leder	Other people working under your leadership	1. Yes 2. No/Unemployed 8. Don't want to answer 9. Don't know
8.	Bed3	Person employed by:	1. Privately owned company 2. Privately owned entity (corporation included) 3. City/municipality owned entity 4. County owned entity 5. State owned entity 6. Unemployed 8. Don't want to answer 9. Don't know

N.	Short names of the variables in original data	Variable	Coding
IV. BMI and mental health variables			
9.	H1	How would you rate your own health state?	1. Very good 2. Good 3. Neither good nor bad 4. Bad 5. Very bad 8. Don't want to answer 9. Don't know
10.	H9_5	Breathing problems for the last 3 months	1. Yes 2. No 8. Don't want to answer 9. Don't know
11.	H9_9	Problems with anxiety or phobias for the last 3 months	1. Yes 2. No 8. Don't want to answer 9. Don't know
12.	H9_10	Depressed for the last 3 months	1. Yes 2. No 8. Don't want to answer 9. Don't know
13.	H9_11	Irritable or aggressive for the last 3 months	1. Yes 2. No 8. Don't want to answer 9. Don't know

N.	Short names of the variables in original data	Variable	Coding
14.	H9_12	Concentration difficulties for the last 3 months	1. Yes 2. No 8. Don't want to answer 9. Don't know
15.	H9_13	Sleep problems for the last 3 months	1. Yes 2. No 8. Don't want to answer 9. Don't know
16.	H9_14	Being tired for the last 3 months	1. Yes 2. No 8. Don't want to answer 9. Don't know
17.	H15ps	Visited a psychologist for the last 12 months?	1. Yes 2. No 8. Don't want to answer 9. Don't know
V. BMI and physical discrimination variables			
18.	Vo_Fhels	Subjected to violence for the last 12 months	1. Yes 2. No 8. Don't want to answer 9. Don't know
19.	Vo_F1c1	Subjected to threat for the last 12 months	1. Yes 2. No 8. Don't want to answer 9. Don't know

N.	Short names of the variables in original data	Variable	Coding
VI. BMI and discrimination variables			
20.	Disk_Helse	Being discriminated due to the health problems, diseases, injury	1. Yes 2. No 8. Don't want to answer 9. Don't know
21.	Disk_Andre	Being discriminated due to the other reasons	1. Yes 2. No 8. Don't want to answer 9. Don't know
VII. BMI and social life variables			
22.	SK5a	Do you have any good friends living close to you?	1. Yes 2. No 8. Don't want to answer 9. Don't know
23.	SK5b	Do you have any good friends living in other places?	1. Yes 2. No 8. Don't want to answer 9. Don't know

N.	Short names of the variables in original data	Variable	Coding
24.	SK6	How often do you meet your friends?	1. Every day 2. Every week, but not every day 3. Every month, but not every week 4. Sometimes in the year, but not every months 5. Less than every year 6. No friends 8. Don't want to answer 9. Don't know
25.	SK7	Do you have anybody close to you to speak confidentially?	1. Yes 2. No 8. Don't want to answer 9. Don't know
26.	Leavhome	How often do you leave your house/apartment?	1. Every day or almost every day 2. Minimum 1 time per week 3. Less than 1 time per week 4. Never 8. Don't want to answer 9. Don't know
27.	PlaySpor1	Do you participate in any sport activities?	1. Yes 2. No 8. Don't want to answer 9. Don't know

N.	Short names of the variables in original data	Variable	Coding
28.	PlaySpor2	Would you like to participate in more sport activities?	1. Yes 2. No 8. Don't want to answer 9. Don't know
29.	CineThe1	Do you participate in any cultural activities (cinema, theater, opera, concert, museum)	1. Yes 2. No 8. Don't want to answer 9. Don't know
30.	CineThe2	Would you like to participate more in cultural activities?	1. Yes 2. No 8. Don't want to answer 9. Don't know
31.	VisitFam1	Do you visit your family or friends?	1. Yes 2. No 8. Don't want to answer 9. Don't know
32.	VisitFam2	Would you like to visit them more often?	1. Yes 2. No 8. Don't want to answer 9. Don't know
33.	CafeRest1	Do you go to café, restaurant or bar?	1. Yes 2. No 8. Don't want to answer 9. Don't know

N.	Short names of the variables in original data	Variable	Coding
34.	CafeRest2	Would you like to go more often to café, restaurant or bar?	1. Yes 2. No 8. Don't want to answer 9. Don't know
35.	SightSee1	Do you participate in excursions, weekend trips, and holiday's trips?	1. Yes 2. No 8. Doesn't want to answer 9. Doesn't know
36.	SightSee2	Would you like participate more often in excursions, weekend trips, and holiday's trips?	1. Yes 2. No 8. Don't want to answer 9. Don't know
37.	StopPart_helse	Do your health problems, diseases prevent you to participate more in these activities?	1. Yes 2. No 8. Don't want to answer 9. Don't know
38.	StopPart_funk	Do your poor vision, hearing, balance, concentration prevent you to participate more in these activities?	1. Yes 2. No 8. Don't want to answer 9. Don't know
39.	StopPart_hindring	Do such obstacles as the difficult accessible outdoor setting, transportation, etc., prevent you to participate more in these activities?	1. Yes 2. No 8. Don't want to answer 9. Don't know

N.	Short names of the variables in original data	Variable	Coding
40.	StopPart_bSp	Are there any other reasons preventing you to participate more in these activities?	1. Yes 2. No 8. Don't want to answer 9. Don't know

Appendix III. The results of simple linear regressions for each separate independent variable.

N	Name of variable	Regression coefficient	95% confidence interval for regression coefficient		P-value	% missing / don't know
			Lower Bound	Upper Bound		
1.	Civil Status:					
	1. Married, cohabitant (baseline/constant)	25,5	25,4	25,6	< 0,01	0%
	2. Single	-1,1	-1,3	-0,9	< 0,01	0 %
	3. Widow/widower/survivor	-0,5	-0,9	-0,1	0,03	0 %
	4. Separated	-0,7	-1,7	0,3	0,17	0 %
	5. Divorced partner	-0,3	-0,7	0,1	0,09	0 %
2.	Gender:					
	1. Woman (baseline/constant)	24,3	24,2	24,4	< 0,01	0%
	2. Man	1,5	1,3	1,7	<0,01	0%
3.	Age group:					
	1. 25-44 y.o (baseline/constant)	25,2	25,0	25,4	< 0,01	0%
	2. 16-24 y.o	-2,3	-2,6	-2,0	< 0,01	0%
	3. 45-66 y.o	0,4	0,2	0,6	< 0,01	0%
	4. 66-79 y.o	0,1	-0,3	0,5	0,68	0%
	5. Over 80 y.o	-0,9	-1,4	-0,4	< 0,01	0%

N	Name of variable	Regression coefficient	95% confidence interval for regression coefficient		P-value	% missing/ don't know
			Lower Bound	Upper Bound		
4.	Receiving disability pension					
	Yes, (baseline/constant)	24,9	24,8	25,0	< 0,01	0%
	No	1,25	0,90	1,60	< 0,01	0%
5.	Unemployed for the past three months					
	Yes, (baseline/constant)	23,8	23,2	24,4	< 0,01	0%
	No	1,2	0,6	1,8	< 0,01	0%
6.	Payment at least for 1 hour last Week					
	Yes, (baseline/constant)	25,1	25,0	25,2	< 0,01	0,1%
	No	-0,4	-0,6	-0,2	0,001	0,1%
7.	Other people working under your Leadership					
	Yes, (baseline/constant)	26,6	26,1	27,1	< 0,01	0%
	No	-0,9	-1,1	-0,7	< 0,01	0%
8.	Person employed by:					Total: 0,6%
	1. Privately owned company (baseline/constant)	25,0	24,6	25,4	< 0,01	
	2. Privately owned entity (corporations included)	0,3	-0,1	0,7	0,11	
	3. City/municipality owned entity	0,3	-0,1	0,7	0,17	
	4. County owned entity	-0,5	-1,3	0,3	0,20	
	5. State owned entity	-0,4	-0,9	0,1	0,14	
	6. Unemployed	-0,2	-0,6	0,2	0,3	

N	Name of variable	Regression coefficient	95% confidence interval for regression coefficient		P-value	% missing/ don't know
			Lower Bound	Upper Bound		
9.	How would you rate your own health state? 1. Very good (baseline/constant) 2. Good 3. Neither good nor bad 4. Bad 5. Very bad	24,2 1,2 1,8 1,7 1,8	24,0 1,0 1,5 1,3 0,8	24,4 1,4 2,1 2,1 2,8	< 0,01 < 0,01 < 0,01 < 0,01 < 0,01	Total: 0,2%
10.	Breathing problems for the last 3 months Yes, (baseline/constant) No	27,2 -1,2	26,5 -1,6	27,9 -0,8	< 0,01 < 0,01	0,1% 0,1%
11.	Problems with anxiety or phobias for the last 3 months Yes, (baseline/constant) No	24,9 0,6	24,0 -0,4	25,8 1,6	< 0,01 0,8	0,1% 0,1%
12.	Depressed for the last 3 months Yes, (baseline/constant) No	25,2 0,4	24,6 -0,4	25,8 1,2	< 0,01 0,6	0,1% 0,1%
13.	Irritable or aggressive for the last 3 months Yes, (baseline/constant) No	25,7 -0,3	24,9 -0,7	26,5 0,1	< 0,01 0,1	0,1% 0,1%

N	Name of variable	Regression coefficient	95% confidence interval for regression coefficient		P-value	% missing/ don't know
			Lower Bound	Upper Bound		
14.	Concentration difficulties for the last 3 months					
	Yes, (baseline/constant)	24,8	24,1	25,5	< 0,01	0,1%
	No	0,1	-0,3	0,5	0,7	0,1%
15.	Sleep problems for the last 3 months					
	Yes, (baseline/constant)	25,2	24,7	25,7	< 0,01	0,1%
	No	-0,1	-0,4	0,2	0,4	0,1%
16.	Being tired for the last 3 months					
	Yes, (baseline/constant)	25,3	24,9	25,7	< 0,01	0,1%
	No	-0,2	-0,5	0,1	0,2	0,1%
17.	Subjected to violence for the last 12 months					
	Yes, (baseline/constant)	23,8	22,6	25,0	< 0,01	0,2%
	No	0,6	0,0	1,2	0,06	0,2%
18.	Subjected to threat for the last 12 months					
	Yes, (baseline/constant)	23,4	22,3	24,5	< 0,01	0,2%
	No	0,8	0,2	1,4	< 0,01	0,2%
19.	Visited a psychologist for the last 12 months?					
	Yes, (baseline/constant)	24,5	23,5	25,5	< 0,01	0,2%
	No	0,3	-0,2	0,8	0,32	0,2%

N	Name of variable	Regression coefficient	95% confidence interval for regression coefficient		P-value	% missing/ don't know
			Lower Bound	Upper Bound		
20.	Being discriminated due to the health problems, diseases, injury					
	Yes, (baseline/constant)	25,9	24,2	27,6	< 0,01	0,4%
	No	-0,4	-1,2	0,4	0,31	0,4%
21.	Being discriminated due to the other reasons					
	Yes, (baseline/constant)	24,8	23,4	26,2	< 0,01	0,4%
	No	0,1	-0,6	0,8	0,77	0,4%
22.	Do you have any good friends living close to you?					
	Yes, (baseline/constant)	24,4	24,0	24,8	< 0,01	0,3%
	No	0,5	0,2	0,8	< 0,01	0,3%
23.	Do you have any good friends living in other places?					
	Yes, (baseline/constant)	26,1	25,4	26,8	< 0,01	0%
	No	-0,6	-1,0	-0,2	< 0,01	0%
24.	How often do you meet your friends?					Total: 0,1%
	1. Every week, but not every day (baseline/constant)	25,1	25,0	25,2	< 0,01	
	2. Every day	-0,9	-1,2	-0,6	< 0,01	
	3. Every month, but not every week	0,15	-0,1	0,4	0,24	
	4. Sometimes in the year, but not every month	0,6	0,1	1,1	0,03	
	5. Less than every year	0,7	-0,6	2,0	0,29	
	6. No friends	0,3	-0,4	1,0	0,35	

N	Name of variable	Regression coefficient	95% confidence interval for regression coefficient		P-value	% missing/ don't know
			Lower Bound	Upper Bound		
25.	Do you have anybody close to You to speak confidentially?					
	Yes, (baseline/constant)	24,4	23,9	24,9	< 0,01	0,5%
	No	0,5	0,1	0,9	0,02	0,5%
26.	How often do you leave your house/apartment					Total: 0,4%
	1. Minimum 1 time per week (baseline/constant)	25,6	24,9	26,3	< 0,01	
	2. Every day or almost every day	-0,6	-1,4	0,2	0,12	
	3. Less than 1 time per week	-2,2	-3,8	-0,6	0,01	
	4. Never	-0,4	-2,0	1,2	0,60	
27.	Do you participate in any sport activities?					
	Yes, (baseline/constant)	24,0	23,6	24,4	< 0,01	0,4%
	No	0,6	0,4	0,8	< 0,01	0,4%
28.	Would you like to participate in more sport activities?					
	Yes, (baseline/constant)	24,6	24,3	25,1	< 0,01	0,5%
	No	0,25	0,01	0,4	0,04	0,5%
29.	Do you participate in any cultural activities (cinema, theater, opera, concert, museum)?					
	Yes, (baseline/constant)	24,2	23,8	24,4	< 0,01	0,4%
	No	0,7	0,5	0,9	< 0,01	0,4%

N	Name of variable	Regression coefficient	95% confidence interval for regression coefficient		P-value	% missing/ don't know
			Lower Bound	Upper Bound		
30.	Would you like to participate in more sport activities?					
	Yes, (baseline/constant)	24,6	24,3	24,9	< 0,01	0,6%
	No	0,3	0,1	0,5	0,01	0,6%
31.	Do you visit your family or friends?					
	Yes, (baseline/constant)	25,5	24,8	26,2	< 0,01	0,5%
	No	-0,5	-1,2	0,2	0,18	0,5%
32.	Would you like to visit them more often?					
	Yes, (baseline/constant)	24,8	24,5	25,1	< 0,01	0,7%
	No	0,1	-0,1	0,3	0,18	0,7%
33.	Do you go to café, restaurant or bar?					
	Yes, (baseline/constant)	24,7	24,4	25,0	< 0,01	0,5%
	No	0,3	0,1	0,5	0,02	0,5%
34.	Would you like to go more often to café, restaurant or bar?					
	Yes, (baseline/constant)	24,45	24,1	24,8	< 0,01	0,6%
	No	0,3	0,1	0,5	0,01	0,6%
35.	Do you participate in excursions, weekend trips, holiday's trips?					
	Yes, (baseline/constant)	25,1	24,7	25,5	< 0,01	0,5%
	No	-0,1	-0,4	0,2	0,65	0,5%

N	Name of variable	Regression coefficient	95% confidence interval for regression coefficient		P-value	% missing/ don't know
			Lower Bound	Upper Bound		
36.	Would you like participate more often in excursions, weekend trips, and holiday`s trips?					
	Yes, (baseline/constant)	25,1	24,8	25,4	< 0,01	0,6%
	No	-0,1	-0,3	0,1	0,67	0,6%
37.	Do your health problems, diseases prevent you to participate more in these activities?					
	Yes, (baseline/constant)	26,0	25,4	26,6	< 0,01	1,5%
	No	-0,5	-0,8	-0,2	0,001	1,5%
38.	Do your poor vision, hearing, balance, concentration prevent you to participate more in these activities?					
	Yes, (baseline/constant)	24,6	23,2	26,0	< 0,01	1,5%
	No	0,2	-0,5	0,9	0,64	1,5%
39.	Do such obstacles as the difficult accessible outdoor setting, transportation, etc., prevent you to participate more in these activities?					
	Yes, (baseline/constant)	25,3	24,2	26,4	< 0,01	1,5%
	No	-0,15	-0,7	0,4	0,60	1,5%
40.	Are there any other reasons preventing you participate more in these activities?					
	Yes, (baseline/constant)	24,7	24,4	25,0	< 0,01	1,5%
	No	0,3	0,1	0,5	0,03	1,5%

