Universitetet i Bergen

CANDIDATE

176

TEST

# PSYK140 0 Atferd, helse og ernæring

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# Praktisk informasjon / Practical information

**PSYK140 - Behaviour, Health and Nutrition**
**May 23rd 2016**
**09.00-13.00**

Change of language: Please click the gear symbol in the top right corner

No examination aids allowed
**The candidate must answer 2 of 3 questions.**
**Both questions must be answered satisfactory in order to pass the exam.**
The exam questions and your exam will be available in Inspera Assessment after the exam.

**Assessment, explanation of grades and right to appeal**

Your result on the exam will be announced on June 13th. You will receive an e-mail when the result is published on StudentWeb.

You can ask for an explanation of your grade. The deadline is June 20th.

Please go to Mi side (My page) to find the form or contact information needed.

You can appeal your grade. The deadling for submitting the appeal is July 4th.

You can find the appeal form on uib.no/psyfa or in our information center.

You can send your appeal to post@psyfa.uib.no or hand it in at our Information center in Christes gate 13.

In the event of a request for an explanation of a grade or a complaint of procedural errors in the question-setting, the examination procedure or the assessment procedure, the time limit for appeals pursuant to this section is reckoned from the date when the student receives the explanation or when the appeal is finally ruled on (§ 5-3, Act relating to universities and university colleges).

# 1 Eksamensoppgaven / Exam questions

**Please answer 2 out of 3 questions here:**

Question 1: "Discuss the transdiagnostic view on eating disorders. Background and possible implications"

A recent study from the "International Central Institute of Child- and Youth Media" in Munich revelaed, that adolescent girls and young women can be significantly influenced in developing an eating disorder by the exposure to an unhealthy type of beauty ideal, which is common practice in many popular TV-shows like "America's Next Topdmodel" or many advertisements children and adolescents after often exposed to. As prevelence rates of Eating Disorders are rising and health outcomes can be severe and in some cases life threatening, it is important to gain an insight in the construction and mechanism of Eating Disorders. Therefore an alternative approach to the classification of eating disorders will be discussed in the following essay: the transdiagnostiv view on eating disorders.

According to Fairburn, an eating disorder is a lasting disturbance in eating behavior and weight control behavior with negative influence on somatic health and psychosocial functioning.

Both, in Anorexia Nervos and Builimia Nervos, but also in Eating Disorders Not Otherwise Specified (EDNOS) the main psychopathology is the cognitive symptome of over-evaluation of body weight and shape and the ability, to control those. Furthermore, basing the self-wort largely - or exclusively - on shape and weight and the ability to control those is a pattern, that can be found in all the different types of Eating Disorders. Additionally, comorbid psychiatric features are very often the same (e.g. anxiety and deoession) in all patients suffer from eating disoders.

Factors, that can lead to an Eating Disorder, can be critical life events (e.g. abuse), genetic predispostions, maladaptive thoughts about the self, a lack of the ability to interpret emotions, feelings and behaviors in self and others (mentalisation ability) and distorted family relationships - those factor of the development can also be seen as equally present in all the different diagnoses of Eating Disorders. Furthermore the consequences, that are psychological impairments like depression or anxiety, reproductional problems, bad teeth and bones or gastrointestinal problems can impair well-being and quality of life can be found in the same extend in nearly all the Eating Disorders.

Because of these reasons, Fairburn states, that there are more similarities than differences between the different eating disorders, as the main difference between Bulimia Nervosa and Anorexia Nervose is just the unduly low body weight in anorextic patients (BMI below 17.5 or 15 per cent below the expected body weight).

According to Fairburn's model of the course of all Eating Disorders one common mechanism leads to the different outcomes: the overevaluation of shape and weight leads to highly restricted food intake what again can lead to either very low body weight (when food restriction successful) or normal body weight, when the periods of fasting or low food intake are disrupted by episodes of loss of control, which can be seen in binge eating behavior. In all types of Eating Disorders, Moods and Events can influence the course of the distorted eating behavior.
Another argument that supports the transdiagnostiv view of Eating Disorders can be seen in the fact, that most patients change their diagnoses in the course of their illness - those patients would state not to have different, but one disorder they struggel with. All those stated arguments lead to the assumption, that more unites the different categories of Eating Disorders than what differs them.

The alternative approach to classify Eating Disorders, according to Fairburn, is to distinuish between general and specific components of Eating Disorders. General components are features, that can be also present in other psychiatric disorders, like e.g. anxiety, depression, self-injury and personality traits like perfectionism and low self-esteem. Specific components of Eating Disorders are that is it a cognitive disorder with specific eating habits and weight control mechanisms. Common eating habits are highly regulated, inflexible and strict eating behavior that refer to very low food intake, excessive exercising and binge eating episodes - which are more common in Bulimia Nervosa, but can also occur in Anorexia Nervosa (especially the binge-eating type), especially "subjective binges", where the patients experiencs the food intake as very high, but objectively the portion of food is not. Common reactions to binge eating episodes are compensation-strategies like even stronger restriction of food intake, overexercising, self-induced vomiting or the misuse of laxatives. This is a vicious, self-strenghtening cycle, that the patients need to understand by evaluating the motives and mechnisms behand the behavior.

The implication Fairburn draws from his model, is that the involvement of common mechanism speak also for a common treatment strategy. The most suitable treatment in Eating Disorders can be seen in Cognitive Behavioral Therapy. It focuses not on the eventual cause of the disorder, but on the mechanisms, that maintain the symptoms, which have been identified to be the same in all eating disorders: maladaptive thoughts and images about the self. The influence of mood-intolerance and event-related eating behavior are also edited in the treatment and made understandable to the patient. Important characteristics of Cognitive Behavioral Treatment of Obesity is therefore self-observation and cognitive restrucuring, through trying to identify maladaptive thoughts and to find the motives behind the behavior and learn to react adequality to a situation (e.g. food intake regulation can refer to a perceived lack of control in an outside event. The individual wants to put back the perceived control to itself by restricting the food intake and having control over that) and to break through the vicious circle of unhalthy eating habits. When there are younger patients, is it recommended to involve family and parents, as they are not just role models and facilitators, but also good family relationships can be a preventiv factor against Eating Disorders. In this case, it is important to release the parents from the thought that they have caused the eating disorder. It is important to empower the parent and the sick child to find a weight to restore weight and eating patterns to an age appropriate level. Solution focus thereby is very important: the focus is set on the family action patters that are working in a positive way - not on what had been working wrong. It is important to develop a healthy relationship between parents and child as this is crucial for a normal development of the adolescent. Other forms of treatment, for example, pharmacotherapy can lead to improvements in comorbidities and improve binge eating. Psychoanalytic treatment approaches refer to the lack of ability in mentalization and to distorted relationship in early childhood bonding, that now affect unconsciously actual behavior. Mentalisation abilities can be trained, to better unterstand states, emotions, feelings and behavior in oneself and in others *(I fell uncomfortable because I feel rejected by my friends, not because I am too thick)* and unconcious childhood experiences, that cause distress, can be identified. Studies about the effectiveness reveal however, that, as stated by Fairburn, Cognitive-Behavioral Treatment is most effective, especially on the long-term in prevent relapse.

Conclusively, Fairburn postulates in his transdiagnostic view about eating disorders, that the there are more aspectiy in the different diagnoses of eating disorders that are in common than differences. Common mechanisms that are identified are over-evaluation of weight and shape, which can lead to different symptoms in eating disorders. As there are common mechanisms in the maintenance involved, the disorders should be treated as a single disease and consequently with the same treatment approach.

Question 3: "Describe shortly the hormonal control of appetite, hunger and blood glucose control. Discuss how sleep loss may influence our appetite and choice of food. What can be the long-term consequences of chronic sleep loss on our metabolism and health?"

Obesity is a problem of growing importance in many western societies. In the United States, up to 30 per cent of adults are obesed. The following health consequences are severe and highly expensive to health care systems. Is is therefore important, to promote health by identifying underlying mechanisms in the onset of that disease. Recent research identifies a relationship between sleep patterns and obesity. To understand this association and to derive interventions, it is necessary to understand what mechanisms control appetite,

hunger and blood glucose level. Afterwards, this essay will focus on the influence of sleep on appetite and choice of food and the long-term consequences of chronic sleep loss.

The metabolically most active organ in the body is the brain and it needs constant supply of energy through its main energy ressouce via the blood: glucose. Glucose plays a very important role in brain function (e.g. cell maintenance or the precursor of the synthesis of different neurotransmitters). The hormonal mechanisms, that controls the blood glucose level are the pancreatic hormones Insulin and Glucagon.

Insulin has anabolic effects and is released in the pancreas. As many cells in the body need Insulin to take up Glucose for their cell metabolism, Insulin is released in the blood after the intake of Glucose. Exeptions are cells in the liver in the brain, which do not need Insulin to take up Glucose. The mechanism of releasing Insulin in the body is possible for example through Insulin receptors in the brain, that constantly measure the Insulin level. There are also Glucose receptors in the hypothalamus in the brain, that constantly measure the Glucose level. As an increase in blood Glucose levels leads to an increase in Insulin levels, those hormon-measuring mechanisms in the brain work together. When the level of blood gluose is decreasing, because the blood glucose was taken up by cells, the Insulin level also decreases.

The hormone Glucagon on the other hand has metabolic effects. If there are too low levels of blood Glucose registered, the pancreas releases Glucagon in the blood.  Glucagon produced Glucose by transferring Glycogen into Glucose. These hormonal processes help to provide a more or less levelled blood glucose level. In periods of fasting, glucogenesis takes place after 7 hours of fasting. However, after more than 10 hours of fasting, the brain takes ketone bodies as a ressource of energy - otherwise, if there is no energy supply, brain functions are reduced to a very low level very soon.

The hormones Leptin and Ghrelin are important in the hormonal control of appetite and hunger. After a period of fasting and therefore before a meal, the "hunger hormone" Ghrelin is released by the stomach. It increases the craving for food and helps therefore to provide continuous energy uptake and supply. The level of Ghrelin decrease directly after a meal, as its function, to stimulate food intake, is fulfilled. On the other hand, the "satiety hormone" Leptin, what is produced in the hypothalamus and released after a meal, produces a feeling of satiety. Mutations in mice, in the so called ob/ob-genes, what lead to the fact that no leptin can be produced, show severe consequences of lack of leptin: the mice are obese and eat big amounts of food without ever reaching a feeling of satiety.

Sleep is a very important factor in keeping the body in a homeostasis. Slow-wave sleep is thought to be the most restorative sleep-phase, where the heart rate and the blood pressure are lowered, the cortisol (stress-hormone) levels are decreasing and alertness is decreased and therefore is important to prevent cariovascular deseases or stress.

Sleep influences furthermore the gene expression in many hormones. Additionaly to the effect, that many hormones (like e.g. ghrelin, leptin, cortisol) underly a circadian rhythm of more or less 24 hours in their gene expression, biological strucutres like the suprachiasmatic nuclei or clock genes, provide a 24-hour circadian ryhthm. "Zeitgebers" like light and food influence and adjust the biological and hormonal systems to the outside world. Normally, the biological and hormonal circadian rythms are synchronous with the sleep pattern of an individual.

Sleep loss or altered sleep can lead to changes in this system. Van Cauter and colleagues demonstrated with their studies, that a short sleep duration of four hours for only two nights can already lead to changes in the blood Leptin and Ghrelin levels (those hormonal systems that control eating behavior). Other studies showed, that chronic sleep deprivation or chronic low sleep duration is associated with a higher BMI, especially e.g. in shift-workers. The theory behind ist, that the balance in the circadian system is impaired in shift-workers. Zeitgebers like food or light are not consisent, and toghether wird unregulary sleeping patterns lead to a altered hormonal release for example in Leptin and Ghrelin. An exploration of the blood hormonal levels in individuals with sleep loss or altered sleep revealed the following: chronic low sleep (less than five hours per night) increased the Ghrelin levels in the blood, simultaneously, a lower level of blood Leptin could be found. This has direct effect of food intake, but also on food choice. The individual experiences a heavier craving for food, while the satiety signals after food intake are reduced and therefore the longing for food increases again.

Research results indicate, that chronic sleep loss in school-aged children is associated with poorer diet decision: the children suffering from chronic low sleep duration chose to eat more unhealthy food like for example junk food, sweetened beverages like Coca-Cola and more carbohydrates.

In general chronic low sleep is associated with being less alert, less concentrated, more aggressive, showing a worse performance in memory and learning tasks and poorer diet choices and and increased risk of overweight or obesity. Obesity in turn can lead to other health complications, like e.g. cariovascular problems, fatty liver, asthma, sleep apnea, insulin intolerance, type 2 diabetes and lower well-being and quality of life in general. As those health consequences imply high costs for the health care system and big impairments in quality of life and well-beinf for the patients, interventions, also on a level of promoting regular and healthy sleep to keep the body inand food-related hormones in a homeostasis, may be beneficial.

Chronic sleep loss or deprivation can affect bodily hormones, like e.g. Leptin and Ghrelin, that influence food intake and food choice. Obestiy and with it other negative health outcomes are associated, which calls for health-promotion interventions to include not just physical activity promoting and healthy diet choices, but also regular healthy sleep patterns in the treatment.

Answered.