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Bachelor Thesis

„Nurse-sensitive Factors in the Context of Nutritional Therapy“

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Abstract

The goal of this study is to investigate the association between nurse-sensitive factors and their impact on the implementation of nutritional interventions and the wellbeing of nursing staff. To see if nursing staff differs from each other, hospital wards were compared in an analysis of variance. To further investigate the impact of variables a bivariate correlation and linear regression analysis was conducted. In order to produce a new model in the context of nurse-sensitive factors and their impact a multiple regression analysis was done. The main results of this study are, that nurse-sensitive factors do not significantly influence nutritional interventions but they influence the wellbeing of nursing staff. The conclusion is that although no significant results can be presented considering nutritional interventions, this approach needs to be further investigated, because tendencies became apparent which are probably afflicted by the lack of power in this study. This bachelor thesis contains 123'789 signs incl. spaces, excl. appendix.

Keywords: nurse-sensitive factors, nutritional therapy, work satisfaction, exhaustion, EFFORT-trial

Declaration of originality

I hereby confirm that I am the sole author of the written work here enclosed and that I have compiled it in my own words. Parts excepted are corrections of form and content by the supervisor.

Title of work: „Nurse-sensitive factors in the context of nutritional therapy“

Authored by: Weibel Caroline

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Index

Figures

Tables

Index of Abbreviations

ACCR	Average Coverage of Calorie Intake
ACPR	Average Coverage of Protein Intake
BMI	Body Mass Index
NRS	Nutritional Risk Score
SPSS	Statistical Package of the Social Sciences

1 Introduction

Nutrition seems to be an essential part of everybody's health. But until today there is no final conclusion about the importance of nutrition in sick people (Schütz, 2013). Although nutritional therapy grows to be an important topic in acute hospitals, it is still strongly affected by habits, resources, stressors and attitudes. The implementation of nutritional interventions is therefore not always evidence-based or best practice. The influencing factors are multidimensional, influenced by many different components. How the topic is treated expresses culture und practice, accepted by the medical staff (Christensson, Unosson, Bachrach-Lindström, & Ek, 2003). Although goals are set by physicians and there are guidelines that can be followed, there are also obstacles in the work process, which can influence the way therapeutically indicated interventions are implemented (Schütz, 2013).

Acute hospital wards are known for a high level of stress and workload. A picture, that is also transported by the media. In television programs doctors and nurses are always able to perform at a very high level. But what does reality look like? The main interest of this thesis is to explore the impact of work-related stressors on the implementation of nutritional interventions. What are the obstacles in the daily business of health care? How do nutritional interventions fit in work processes? The goal is to discover the extent of the nurse-sensitive-factors and get a deeper understanding of possible obstacles during a typical workday in patients care. A possible relationship between these factors and the average coverage of calorie requirement (ACCR) of malnourished patients, points to a new component in the context of malnutrition at Swiss hospitals. Optimizing the nursing process would bear the potential of improving patient care of malnourished patients. The existing economic interest of optimizing nutritional status, grounds on the evidence that improved nutritional status reduces complication and mortality in malnourished patients (Uster, Rühlin, & Ballmer, 2012).

At Kantonsspital Aarau a running trial in the field of nutritional therapies is concerned with the effect of these interventions. The general aim of the running study is „To test the hypothesis that in medical inpatients at risk for under nutrition, early tailored nutritional therapy to reach nutritional targets based on individualized nutritional counseling is a cost-effective strategy to prevent frailty and improve patient outcomes“ (Schütz, 2013, S. 0). One subsequent approach of the trial is concerned with patient satisfaction and wellbeing especially in the context of their nutritional status. Further interesting factors in the setting of nutritional therapy is concerned with the environment of nursing staff - the nurse-sensitive factors (Schütz, 2013).

2 Definitions

In this chapter, important terms will be introduced and explained. Explored variables will be explained in chapter 4.

2.1 Nurse

Qualified nursing is a health profession. A nurse is responsible for patient care, which is influenced by social, socio-cultural, political, economic, demographic and epidemiological changes. Nurses take an active part in the field of prevention and promotion of health. They are in charge of the nursing process and in order to manage they need to have a profound understanding of health, individual needs and values in order to support their clients or patients to manage their lives, illness and adapt to new situations. Usually nurses work intra- and interdisciplinary with other hospital staff such as physicians, physiotherapists or dieticians. They hold responsibility to connect these interdisciplinary services with each other always with the patient's interest in mind. Nurses can delegate certain nursing interventions but need to ensure the necessary monitoring and support of the assisting profession. Nursing is based on evidence-based and scientific knowledge and ethical principals. Further requirements are manual skills and empathy (Schweizerisches Rotes Kreuz [SRK], 2015).

2.2 Nurse-sensitive Factors

The increasing number of people that need to resign from their jobs prematurely and also the employees with disabilities to work based on psychological strains indicate that workload, strain and stress is a growing topic in todays society. Stress is the response to pressure building up because of experienced strain. Whereas the load of pressure is to be understood in a neutral way (whether good or bad) strain is the consequence of it. Stress conversely constitutes an effort to cope with pressure and strain (Schüpbach, 2013). One of the most famous models for explaining process is the transactional stress concept of Lazarus and Launier. Stress is understood as a relationship (`transaction') between individuals and their working environment. Psychological stress refers to the appraisal of the environment. The primary appraisal in the transactional stress concept includes the measurement of significance of the environmental conditions for the own wellbeing. In a secondary appraisal a person tries to estimate the chance of being able to cope with the situation (Lazarus & Launier, 1981, cited in Schüpbach, 2013).

Stressors are environmental conditions that induce stress. In other words stressors trigger a reaction of stress. These triggers can be found in very different situations such as an accident or even just a feedback at work that seems unreasonable. Stressors at work can also be a full e-mail inbox, difficult patients or a dispute with a colleague. For many people stressors in the context of performance,

goals are important. Stress connected to performance requirements can be caused by time pressure, high workload or high responsibility. Another important stressor is social conflict that can be caused by high demands in social exchange such as teamwork. Although high demands can cause stress, this is not an inevitable conjunction. Not every demanding situation automatically leads to a physical and / or psychological stress response. A stress response usually only appears if the individual in a demanding situation is uncertain if he or she can manage the challenging situation. For this confidence resources to cope are needed. If the individual is able to cope with the situation, he or she is unlikely to experience stress (Kaluza, 2012). High workload is a key job stressor in nursing care. It can lead to distress such as cynicism, anger and emotional exhaustion. Stress can lead to a declination in the quality of performance and efficiency because it leads to a reduction of physical and cognitive resources. A suboptimal performance in nursing can affect patient care and the safety of patients (Carayon & Gurses, 2008).

The costs of healthcare have dramatically risen in the past years. To manage this growth of public healthcare expenditures, cost saving is evolving to a prominent and important topic. Strategies like hospital-budget cuts lead to a change in patient-to-nurse ratio, which usually means, that there are more than usual patients treated by one nurse. To compensate this unbalance, patients staying periods are also shortened or some patients will not be submitted but treated as an outpatient. Cost-effectiveness has a strong impact on structures in health care. The reorganization often leads to rationing of health care services, meaning that some tasks or measures will be withheld or shortened due to this form of restructuring. The definition for implicit rationing is defined as „the withholding of or failure to carry out necessary nursing measures for patients due to a lack of nursing resources (staffing, skill mix, time)" (Schubert et al., 2005 cited in Schubert, Glass, Clarke, Schaffert-Witvliet, & De Geest, 2007).

Nurses are also role models for patients. How nurses act and behave in terms of sickness or health behavior has a profound influence on their patients. This impact is more than just a humane interaction and work (Büssing & Glaser, 1999).

In the context of this study nurse-sensitive factors are understood to be stressors at work, rationing of nursing care and attitude of nursing staff.

2.3 Malnutrition and Nutritional Therapy

Malnutrition is an imbalance between the daily requirement of nutrients and the actual intake. About 20-30% of the patients in Swiss hospitals are in fact malnourished (Felder, Fehr, Bally, & Schütz, 2014). Many patients here fore seem to benefit from a dietetic treatment. According to Baldwin and Weekes (2012) dietary support and oral nutritional supplements (ONS) are

recommended for patients with malnutrition. Dietary counseling with or without ONS leads to improved energy intake, although the heterogeneity of these findings is considerable (Baldwin & Weekes, 2012). Nutritional support defines different kinds of strategies to provide nutrition or nutrients. This can be orally (regular diet, therapeutic diet, fortified food, ONS) or via enteral nutrition (with a tube provided through the gastrointestinal tract) or parenteral nutrition (with a venous application of nutrients) to prevent or treat malnutrition. So-called artificial nutritional support such as ONS, enteral or parenteral nutrition is an important part of nutritional support in a clinical setting (Valentini et al., 2013). Altogether 36% of these patients receive ONS (Baumann, Dolder, Stanga, Joray, & Kurmann, 2012). ONS are usually fully balanced drinks in portions of 1-2 dl/serving, containing approximately 254 calories and 20g protein (Uster, Rühlin, & Ballmer, 2012). These drinks are high caloric and contain a high amount of proteins. The market offers different brands, flavors and products for special needs (e.g. no fat for patients with trouble metabolizing fatty acids) (Schweizerische Gesellschaft für Ernährung [SGE], 2015; Valentini et al., 2013).

The Nutritional Risk Score (NRS) is a score to assess the risk for malnutrition. The NRS assumes that there are multiple predictors for malnutrition. These predictors are the nutritional status, the severity of the disease and age (Felder et al., 2014). The NRS is an instrument that allows a very quick estimation of the nutritional situation and is very common in Swiss hospitals to decide if patients need nutritional support or not. It is important to understand that the score does not offer a final diagnosis for malnutrition. In addition it is necessary to capture the whole situation of the individual patient and understand the context (Inselspital Bern, 2010; Kondrup, Rasmussen, Hamberg, & Stanga, 2003).

The Body Mass Index (BMI) is a simple index of weight-for-height. This index is commonly used to classify underweight, overweight and obesity in adults. It is defined as the weight of a person in kilograms (kg) divided by the square of the height in meters (m). The term for calculations is therefore kg/m^2. The classification for weight in adulthood the World Health Organization [WHO] (2015) proposes, that a BMI < 18.5 kg/m^2 represents underweight, a BMI between 18.5 kg/m^2 and 24.99 kg/m^2 stands for the normal range and a BMI >25 kg/m^2 indicates overweight. Obesity is classified as a BMI >30 kg/m^2. For example, an adult who weighs 50kg and whose height is 1.75m will have a BMI of 16.3 kg/m^2. According to WHO (2015) this can be classified as underweight. According to SGE (2015) a normal BMI for geriatric patients ranges from 22 - 26.9 kg/m^2 and is therefore higher than the recommended range for adults.

3 Context of the Study and State of the Art

Although the nutritional support is implemented in most hospitals there is still no precise understanding about whether loss of appetite associated with acute illness is indeed a protective physiological response or a therapeutic target needing early corrective nutritional therapy. In order to eludicate this important clinical problem a large randomized-controlled trial (RCT) was initiated comparing early nutritional therapy with „appetite-guided" nutrition in this patient population. The EFFORT-trial (Effect of Early Nutritional Therapy on Frailty, Functional Outcomes and Recovery of Undernourished Medical Inpatients Trial) states that there is an import lack of high quality data from large RCTs in unselected acutely-ill medical inpatients to support the early use of nutritional therapy and to shed light on optimal type, caloric amount and timing of nutritional therapy (Felder et al., 2014). Hence, evaluation of efficacy, safety and cost benefits within a large, well-controlled conclusive RCT is warranted to assess the effects of early nutritional therapy on patient outcomes in the medical inpatients. The EFFORT trial aims to answer questions about overall benefit or harm. The study will also explore and provide conclusive answers about reasons whether, why, how, and in which patient populations nutritional therapy does and does not works. Nutritional therapy is a intervention that is influenced by different factors. While EFFORT focuses primarily on the efficacy of the nutritional strategy, other factors such as nurse-sensitive factors (i.e. work load of nurses, nurse staffing, attitudes of nursing staff towards nutritional therapy) may be of particular importance in the successful implementation of such intervention. While dieticians recommend individual strategies for patients, the physician needs to support these strategies and, most importantly, the nursing staff is key in everyday application of the recommended interventions, i.e. actively motivate and if needed assisting the patient while eating (Schütz, 2013). Although nutritional therapy is a common intervention in the setting of acute care, there is still no standardized approach on how to implement prescribed nutritional therapy (Baumann et al., 2012). Baumann et al. (2012) state that patient-compliance is hereby certainly an important cause but there is also a major difference in handling between different medical staff.

3.1 Motivation

The goal of this bachelor thesis is to determine the nurse-sensitive factors (in the work setting of nurses) that influence the implementation of a prescribed nutritional intervention. A heavy nursing workload seems to be related to suboptimal patient care and has a negative impact on patient outcome (Carayon & Gurses, 2008). The escalated needs and the dwindling resources force nurses to ration their attention across their patients. Because certain tasks are therefore neglected, risks of negative patient outcomes increase (Schubert, 2008).

The main interest of this study is to explore the impact of work-related stressors on the implementation of nutritional interventions. What are possible obstacles in the daily business of health care? How can nutritional interventions be optimally integrated in every day work? The goal is to discover the extent of the nurse-sensitive-factors and get a deeper understanding of possible hindrance during a typical workday in patients care. If there is a relationship between these factors and the ACCR, there is also a new variable in the context of malnutrition at Swiss hospitals. Optimizing nursing processes could lead to an improved concept (Uster, Rühlin, & Ballmer, 2012). In the context of this thesis, the patient-sensitive factors are not of interest (e.g. patients' satisfaction). Although this would be also an interesting angle of view, this study is only concerned with nurse-sensitive factors.

3.2 Hypothesis and Research Questions

The general aim of this study is to test the hypothesis that nurse-sensitive-factors have an impact on the successful implementation of nutritional strategies. The alternative hypothesis is that these work-related factors in nursing do not affect the implementation of nutritional strategies and therefor do not affect the ACCR of undernourished patients. Towards this aim seven hypotheses will be tested.

The first hypothesis is concerned with the examination of time pressure of nursing staff and its influence on nutritional interventions. It will be examined if time pressure has an impact on the endpoint nutrition of patients.

> ***H1:*** *The average calorie and protein intake of internal medicine patients with an NRS ≥3 points is significantly lower if the nursing staff experiences* ***time pressure****.*

The second hypothesis examines the impact of social conflicts (i.e. social stressors). It will be investigated whether the extent of social conflicts influences the quality of nutritional support measured with the outcome of nutrition of patients.

> ***H2:*** *The average calorie and protein intake of internal medicine patients with an NRS ≥3 points is significantly lower if the nursing staff experiences* ***social conflicts****.*

The third hypothesis states that the extent of organizational stressors has an influence on the *ACCR*, because organizational stressors (e.g. occupancy of ward) can lead to negligence of nutritional support.

> ***H3:*** *The average calorie and protein intake of internal medicine patients with an NRS ≥3 points is significantly lower the more the nursing staff experiences* ***organizational stressors.***

The fourth hypothesis is concerned with the influence of rationing nursing care and its impact on the adequacy of nutrition in malnourished patients.

> ***H4:*** *The average calorie and protein intake of internal medicine patients with an NRS ≥3 points is significantly lower the more the nursing staff performs* ***implicit rationing*** *of nursing care.*

The fifth hypothesis states that there must be an association between the ACCR and the attitude towards nutritional interventions. It seems conceivable that a rather negative attitude towards an intervention leads to negligence of this exact intervention rather before neglecting other interventions of nursing care.

> ***H5:*** *A negative* ***attitude*** *of the nursing staff towards nutritional therapy is negatively associated with the average calorie and protein intake of internal medicine patients with a NRS of ≥3 points.*

The sixth hypothesis is concerned with the work satisfaction of nursing staff. It states that the presence of overwhelming extent of stressors lead to change in work satisfaction.

> ***H6:*** *There is an association between the extent of* ***nurse-sensitive factors*** *and work satisfaction of the nursing staff.*

The seventh hypothesis is concerned with the association between stressors and a subsequent strain. Exhaustion is a form of strain and can follow the feeling of not being able to cope. Exhaustion is therefore, assumed to be connected with the extent of stressors.

> ***H7:*** *There is an association between the extent of* ***nurse-sensitive factors*** *and the exhaustion of the nursing staff.*

The main research questions of this study are:

What is the impact of work-related stressors of the internist nursing staff on the ACCR of patients with a Nutritional Risk Score of ≥3 points?

Furthermore the question if there is a difference between the different staff of the different wards will be of interest.

Do hospital wards at KSA differ in the extent nurse-sensitive factors and the adequacy of nutritional coverage (calorie and protein) of internal medicine patients?

4 Method

To investigate the hypotheses a survey will be conducted (see Appendix A). The goal of the survey is to collect information about relevant constructs, logically connected to the field of nurse-sensitive factors and the issue of deliberately withholding indicated or even prescribed interventions for patients (here nutritional intervention). In the following chapters the variables and the methodology of the procedure will be introduced.

4.1 Material

In the following chapter (4.1.1 – 4.1.3) all the independent variables (IV) will be introduced. The chapters 4.1.4 – 4.1.5 are concerned with the dependent variables (DV). Furthermore the role of each variable in context of nutritional therapy will be elucidated.

4.1.1 Rationing of Nursing Care

To assess the work situation of nursing staff Künzi and Schaer-Moser (2002) conducted a survey for nurses, management staff and head nurses of 70 institutions. Altogether 1'954 nurses stated that there is a 40% deterioration of quality in nursing. More than half of the participants had to reduce their contributions due to lack of time, especially in the areas of dialogue with the patients, caregiving and nutritional support. The increased need of nursing and the reduced resources pressures nurses to ration their support and attention. Certain nursing interventions are therefore reduced or left out. As a consequence there is an increased risk for negative outcomes in patients (Schubert, 2008). Necessary nursing measures refer to a set of nursing tasks and treatment measures which are considered as relevant for a patient's outcome. These tasks and measures are classified in following aims: surveillance; therapy, support; prevention or prophylaxis; activation or rehabilitation; educational and instructional measures and measures related to nursing processes. These aims are predefined by a consensual understanding of health care professionals, professional standards, educational knowledge and culture. Based on this knowledge implicit rationing is an interesting and important variable because it is a phenomenon that can be caused by work overload (Schubert et al., 2007).

The Basel Extent of Rationing of Nursing Care (BERNCA) is an instrument to measure this extent of reduction or withholding of healthcare interventions (e.g. help a patient with eating problems while he or she is eating) (Schubert et al., 2007). To measure the extent of implicit rationing in nursing at KSA, the whole BERNCA-survey will be included in the survey. All 32 items measure the extent to which the tasks / measures are withheld in order to meet the requirement to save costs in healthcare. The items were scored using a four-point Likert scale ranging from 1 (nie = never) to 4

(oft = often). An additional category stated that the nursing measure was not necessary (Massnahme war nicht erforderlich). The measured variable is called ***Implicit Rationing*** (RAT) [1].

4.1.2 Work Stressors

Time Pressure is a very present topic in nursing care. Despite the availability of food an inadequate supply or nourishing can be explained by the lack of time of the nursing staff. Adequate nutrition (energy and nutrients) is strongly dependent on the provision of the optimal dietary components by the nursing staff. Furthermore, the support (e.g. during eating or while choosing from the menu) of patients is crucial for nutritional interventions. Nurses often experience time pressure, which can lead to negligence of their duties caused by failing to perceive the problem or simply by lacking resources and time to assist (Pauly, 2008). Nurses who experience heavy workload may not have sufficient time to do tasks safely, apply safe practices, or monitor patients adequately. They also may reduce the communication with physicians and other providers for a holistic patient care approach (Carayon & Gurses, 2008). Because of the actuality and presence of the topic time pressure in the setting of acute care this variable is an important piece in the context of stressors in acute nursing care.

Rigid hierarchical structure can lead to strains in hospital staff. The process of communication and the information flow between different hierarchical levels and also between different hospital wards can be a source of ***Social Conflict*** and inefficiency. Also there can be a lack of appreciation and recognition for technical as for social skills from superiors or other interdisciplinary professions and insufficient feedback concerning the performance. Due to economical decisions, cut backs in staffing are possible, which can trigger the fear of losing employment. Further more it can be a reason for the prioritization of economical interests instead of their own and the patients needs (Baumgart, Metz, & Degener, 2003). Besides the challenge in communicating within the own team, nursing staff reports that interactions and communication are particularly difficult with interdisciplinary teams e.g. just like the exchange with doctors or dieticians (Schmidt et al., 2008). Insufficient interdisciplinary teamwork and communication can lead to late recognition of malnutrition. Moreover responsibilities are often confused working in an interdisciplinary team (Keller, Lüthy, Meier, Rosé, & Sterchi, 2006). Ineffective communication about responsibilities, conflict with colleagues and superiors, the burden of death and dying and lack of competence when dealing with psychological challenges are the most evident characteristics of the work in nursing (Baumgart, Metz, & Degener, 2003). Recent studies show that factors like ineffective communication can significantly affect nursing workload (Carayon & Gurses, 2008).

[1] Variables will be written in short form in the chapters 4 and 5.

Organizational Stressors lead to strains caused by how the hospital (or ward) is managed. Relevant aspects concerning this topic are occupancy of the ward, vague information as well as fluctuation and absenteeism. The occupancy of a hospital ward is managed by doctors but has an impact on the workload of the nursing team. Besides the common overoccupancy of hospital wards in acute hospitals also inappropriate inpatient care[2] leads to difficulties in management. Vague information about change is also an obstacle for an ideal management because a confusing information policy leads to insecurity. Further aspects of organizational stress are fluctuation and absenteeism. A probable cause for absenteeism is dissatisfaction and it results in a strain of its own for the team involved. If staff members leave or if they are absent it results in more effort for the other team members (Büssing, Glaser, & Höge, 2002). Because organizational stress affects the nursing-teams workload as well as their psychological wellbeing it can also impact patients care and therefore the implementation of interventions like nutritional support.

All work stressors mentioned in this chapter were measured with an established instrument, the Work Analysis Instrument for Hospitals (Glaser & Büssing, 2002). This analysis consists of two versions, a self-report version (survey) and an expert-rating version. The primary goal of this survey is to assist practitioners to analyze the workload of inpatient nursing staff (Büssing, Glaser, & Höge, 2002). It is therefore not primarily a tool, to investigate research questions, but in case of this study it is pragmatic and fitting. Due to the possibility of a modular usage, subscales from the self-report version of the screening version were selected. The short screening version of the TAA-KH-S was chosen because of the importance for this study to avoid dropouts in the limited pool of participants. Especially because it is assumed that time pressure is a common challenge in the daily business of a hospital nurse, it is not in the interest of this survey to increase this stress level. Furthermore a good acceptance of the survey is expected to be likely if the survey does not impose too much work on the participants. Because the main interest of this study is to explore the stressors in health care, the subscales Occupancy (OCC) of the ward, Uncertain Information Flow (INF), Fluctuation/Absenteeism (FA). Social Stressors (SOS) and Unspecific (UT) and Specific Time Pressure (ST) were elected to explore nurse-sensitive factors. UT is concerned with the feeling of not having enough time (e.g. nurses need to hurry but are still not able to finish their task). ST on the other hand is caused by the limited accessibility of or fixed appointments with other people (Büssing, Glaser, & Höge, 2002).

[2] In this context inappropriate inpatient care is caused by wrongfully admitting patients on hospital wards that are not specialized to treat this patients condition (e.g. patient with pulmonary disease is admitted by a surgical ward) (Büssing, Glaser & Höge, 2002).

4.1.3 Attitude toward Nutritional Intervention

There are no recent publications found that are addressing the possible impact of the attitude towards nutritional interventions of nursing staff on dietetic interventions itself, but according to Keller et al. (2006) the topic of malnutrition is still neglected in the training of nursing staff. To improve the nutritional status in a patient with an eating deficiency both patient and nurse are challenged. To help and support patients, a positive attitude is assumed to be an important factor. There are various types of eating problems. Not every patient with malnutrition experiences the same sources of troubles causing no appetite or inability to eat. For example swallowing difficulties are often very complex and consequently ask for individual treatment or patient support. Nutritional interventions therefore depend strongly on the nature of the cause. Loss of appetite is a major problem of malnutrition. It requires a careful and accurate assessment of the patient's history and the examination (Christensson et al., 2003). The scale is obtained from a survey-version designed for nurses in geriatric care. The scale bases on Fishbein & Ajzen's theory of „reasoned action". The theory implies that most actions of social relevance are under volitional control and that the intention of an individual to show or not to show a behavior is the immediate determinant of the action. According to Fishbein and Ajzen (1975, cited in Christensson et al., 2003) there is a probable relationship between attitude and behavior. Groups known to differ their behavior also tended to change in their attitudes. This constitutes a link between behavior and attitude. „The Staff Attitudes to Nutritional Nursing Care Geriatric Scale" is a tool implemented and validated by Christensson et al. (2003) in Sweden to measure nurses' attitudes towards nutritional care for elderly.

All 18 items of the scale are negatively worded (e.g. „Mealtimes do not need to be individually adjusted") and designed as a five-type Likert-scale. The scaling reaches from „completely disagree" (Stimme gar nicht zu) to „completely agree" (Stimme vollkommen zu). According to the authors, the negative wording was chosen due to a more accurate detection of differences of nurses in their validation study (Christensson & Bachrach-Lindström, 2009). This scale is appropriate for this study although the patient sample is located in a geriatric home. Due to a better fit in an acute hospital two items were excluded („It is sufficient to measure body weight of those residents whose physician has prescribed it" and „It is best that the staff serve food on plates without help from the residents). The first item seemed unfit because in an acute hospital the weight of every patient is measured daily and the second item is unnecessary because the food is always served on plates without the help of patients. All the items were adapted in regard of wording because the term "resident", which is conclusive for home residents, was changed to patients. Because the scale was not available in a German version all the items were translated. The measured variable is called ***Attitude towards Nutritional Interventions*** (ATT).

4.1.4 Calorie and Protein Intake

Based on the research question the variable of ACCR is the main outcome variable in the context of this study. The data was collected from the EFFORT-trial. All patients were re-assessed daily during their hospital stay for actual energy intake and hospital outcomes. The caloric intake was calculated on an individual patient basis. The percentage of the caloric coverage was estimated by calculating the daily requirement of calories and the actual daily intake. The energy requirement, referred to as calorie requirement, was estimated with the Harris Benedict[3] equation. The daily intake of calories was calculated based on a food diary. This will be done through a dietician in charge of the EFFORT-trial. The average calorie and protein intake was calculated including the first five evaluations starting at the day of admission. This procedure was chosen to avoid the inclusion of patients who stayed less than three days in the EFFORT-trial, because three days are too short allow a review about improvement or worsening of a nutritional status. This decision is based on an agreement with the chief investigator of the EFFORT-trial. The inquiry included data starting three months prior to the survey. This way it was possible to include enough patient data and still be able to assess the nurse-sensitive factors of the same time span of three months.

For additional insight in the topic of nutrition also ACPR is an interesting dependent variable. The percentage of the protein coverage will be estimated by calculating the daily requirement in context with the actual need of each patient. Protein requirement can be estimated with the calculation formula *1.2g/kg of body weight*[4]. The calculation were previously done by a dietician and extracted from the preexisting EFFORT-data.

4.1.5 Work Satisfaction and Exhaustion

Current literature demonstrates that an agreeable work environment for nurses is associated with better outcomes for nurses at work (i.e., lower levels of burnout and lower overall stress), lower job dissatisfaction and lower fluctuation rates. Also studies have revealed that the quality of the nurse work environment is linked to patient safety. It can be shown that better nurse work environments are associated with lower patient mortality, fewer failures to rescue and lower nurse-sensitive adverse events such as medication errors (e.g. parenteral nutrition administered too rapidly) (Desmedt, De Geest, Schubert, Schwendimann, & Ausserhofer, 2012). Therefore work satisfaction seems to be an important factor in the setting of hospital work and nurse-sensitive factors. Work

[3] The Harris Benedict equation is originally published in 1918. It is a derived regression formula to estimate the resting energy expenditure (REE) considering weight, height, age and sex. The total energy expenditure, i.e. the total calorie requirement can be estimated by adding additional energy cost. The additional energy requirement can be caused by fever, trauma, activity and malnutrition (Harris & Benedict, 1918).

[4] According to a verbal information given by Dr. med. Ph. Schütz (KSA, Aarau).

satisfaction can be understood as a triggering factor but also as a result of an ineligible work environment.

The Copenhagen Psychosocial Questionnaire (COPSOQ) is a validated questionnaire for the measurement of psychosocial factors at work in the context of risk assessment purposes or as a base for worksite health promotion. ***Work Satisfaction*** (SAT) is a subscale in the questionnaire and contains seven items. All these items measure SAT, for example „How satisfied are you with the perspectives in your job" („Wie zufrieden sind Sie mit Ihren Berufsperspektiven?"). COPSOQ is currently in use in more than fifteen countries (Nübling et al., 2011). The categories to answer are based on a fourstage Likert-type scale. It ranges from „very satisfied" („sehr zufrieden") to „very unsatisfied" („sehr unzufrieden"). The measured variable is called SAT.

To gain a more profound understanding about the wellbeing of the collected sample also exhaustion will be measured - exhaustion contains feelings of overstraining and loss of energy. Every day seems the same and there is no excitement anymore at work. This feeling is part of impaired wellbeing (Schubert, 2008). According to Schubert (2008) exhaustion among nurses occurs in cases of low nurse staffing and can therefore be understood as a possible outcome variable examining nurse-sensitive factors.

The Oldenburg Burnout Inventory (OLBI) contains a scale to evaluate exhaustion on a fourstage Likert-type scale. It reaches from fully disagree („völlig unzutreffend") to fully agree („völlig zutreffend"). Exhaustion will be measured with one scale, containing eight items, taken out of the OLBI, for example „There are days I feel tired before I go to work" („Es gibt Tage, an denen ich mich schon müde fühle, bevor ich zur Arbeit gehe."). Three items are positively worded which need to be recoded and five items are negatively worded (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). The measured variable is called ***Exhaustion*** (EXH).

4.1.6 Quality of the Survey

To ensure high quality of the study, the regard of research quality criteria is necessary. In this study a survey with validated scales was conducted to reveal nurse-sensitive factors, calorie intake and protein intake were assessed by a standardized approach (EFFORT-trial, cf. chapter 3). In the following section, the quality criteria will be introduced.

Objectivity is a criterion that has its roots in quantitative research and is defined as a test or a scale that measures the targeted characteristic or construct regardless of the administering person (Moosbrugger & Kelava, 2012). Objectivity in conducting the survey was assured by giving every participating nurse the same instruction. The whole survey was integrated in an online tool (Unipark) and therefore every participant had to follow the same instruction to answer the survey questions. In

order to ensure the evaluation objectivity, the data was converted to SPSS and was not further adapted except the exclusion of certain participants based on acceptable duration to fill out the questionnaire and completeness of the answers. The objectivity in interpretation primarily based on the statistical outcomes following the instruction of Field (2009).

The concept of reliability is relevant in quantitative research and constitutes that a test or a scale is reliable if the construct is measured without an error in measurement (Moosbrugger & Kelava, 2012). Reliability was accounted of by doing reliability calculations (cf. chapter 5.2).

Validity is of great importance in quantitative research. The definition states that a test or a scale can be considered valid if it actually measures the construct it is supposed to measure and nothing else (Moosbrugger & Kelava, 2012). In this study only previously validated scales were integrated in the survey to achieve a most possible valid outcome (see Table 1).

Table 1: Scales

BERNCA: This survey is a validated and reliable test for nursing staff in acute medicine hospitals. It has been confirmed that BERNCA represents the domain of implicit rationing of nursing care and that the included questions are relevant and internally consistent and homogenous. The scale has an internal consistency of Cronbachs alpha (Cronbachs α) 0.93. (Schubert et al., 2007).

TAA-KH-S: The Screening version of the survey is also a validated and reliable instrument to assess the work stressors of nursing staff. (Glaser & Büssing, 2002). Occupation, information flow and fluctuation/absenteeism contain each just one item (α = --), *Social stressors* contain four items (α = .60), Specific time pressure contains two items (α = .74) and unspecific time pressure contains five items (α=.75) (Büssing, Glaser, & Höge, 2002).

COPSOQ: The whole questionnaire is a validated instrument. It has also been tested in a hospital setting (nursing staff and doctors). The German standard-version of the COPSOQ was developed and validated in the years 2003-2005. It contains seven items (α = .84) (Nübling et al., 2011).

OLBI: It is a validated scale Cronbachs α of the scale exhaustion is .82 (Demerouti et al., 2001).

SANN-G: It is validated scale assessing the attitude of nurses in the setting of nutrition in geriatric care (Christensson & Bachrach-Lindström, 2009). No validation of the translated and adapted version took place. With regard to internal consistency reliability, total Cronbachs α of the SANN-G scale is 0.85 (Bonetti, Bagnasco, Aleo, & Sasso, 2013).

4.2 Sample

In a primary step the sample selection took place, which was limited to five different hospital wards, all belonging to internal medicine. Anticipatory there might be a possibility to include four more hospitals for future research. But for this study data was collected from five different wards with a minimum sample of six nurses per ward (=30 participants). Male or female nurses between 20-65 years old with an accredited nursing-degree who work in the same team for ≥3 months were included. To be able to control possible differences between nurses who work part- time or full-time there was an item asking about the employment status (full- time, part-time, if part-time: percentage). The participation took place on a voluntary basis. To encourage the staff for participation an incentive of 15 CHF in form of a cafeteria voucher was handed out.

The patient population was supposed to be undernourished or at risk for malnutrition (NRS of ≥ 3 points), aged 18 years or older, hospitalized for an acute medical illness in non-critical care wards. Excluded were patients hospitalized in critical care, surgical wards, patients in nursing homes or long-term facilities and when treated as outpatients. Patients were included from both EFFORT-trial groups - the intervention and the control group.

The estimation of the sample size was done *a priori*. According to a power analysis done with the G*Power program (Faul, Erdfelder, Lang, & Buchner, 2007) the goal to reach a power of 0.95 and an effect size of 0.3 (medium effect size) is: 210 participants for the analysis of variance (ANOVA), 139 participants for the bivariate correlation analysis, 34 participants for the regression analysis and 46 participants for the multiple regression analysis (see Appendix B).

4.3 Procedure

4.3.1 Data collection

The survey was conducted with an online-questionnaire compiled with the support of the online tool Questback Unipark. Against the calculation of the power analysis (cf. chapter 4.2) the aim was to collect a sample of nurses with a minimum of 30 participants. The small number is due to limitations predefined by the chief investigator of the EFFORT-trial. It was possible to access the survey during a timeframe of 14 days from the workplace computer without a personal identification in Questback Unipark. Additionally there was a reminder sent by the director of nursing. Access to the survey was closed after 16 days.

Patient data was obtained from the existing data set passed on by the chief investigator of the EFFORT-trial at KSA.

4.3.2 Confounders

The confounders discussed in this chapter often occur in internet-based surveys (Huber, 2009, p 79). Most common confounders are self-selection, multiple participation, environmental factors and premature termination. Further confounding variables such as difficulty in understanding, motivation and social-desirability-response-set of participants should also be considered. The following preliminaries help to control these possible confounders (Raab-Steiner & Benesch, 2012).

To avoid multiple participations, the survey was distributed by the head nurses of every ward to selected nurses that offered their participation in the project. Multiple participations cannot be avoided with this method, but multiple participation seems rather unlikely because the nurses need to take their time during an ongoing workday, which is not always easy.

The environment can be the cause of disturbance. To facilitate the act of filling out the questionnaire this project was supported by all the head nurses. Time to fill out the survey was offered during work hours. The duration was estimated at maximum 20 minutes per nurse.

To avoid premature termination of the survey an incentive was offered if the whole survey was worked through. Because the nurses had to state on which ward they are working it was possible to follow up how many nurses participated from each ward. Based on this information the amount of vouchers (=incentive) was calculated. Furthermore the survey was pretested for premature termination. Also difficulty in understanding and motivation were a topic addressed in the pretesting. Special introductions were carefully worded in a short and explicit way. Additionally the head nurses were instructed to remind their staff after two weeks. The wards with a minimal participation were encouraged to remind the staff.

The issue that the answers will be influenced by a social-desirability-response-set cannot be fully exterminated. The fact that validated scales were used and also pretested in respect of this problem the problem of social-desirability has been counteracted. Also confidentiality is important for the participants to be able to answer in a most truthful and honest way. It was expected that a confidential questionnaire would lead to more truthful and less confounded answers without an interviewer bias or high extent of social desirability[5].

The ACCR as well as ACPR are difficult to measure and to control. Nutritional journals are usually biased and inaccurate (Palmer, Miller, & Noble, 2014). Because this endpoint will be evaluated in the initial study (EFFORT-trial) there will be no additional evaluation. This bias therefore is impossible to control for the purposes of this study.

[5] Social Desirability is an adaption of thinking and / or behavior to meet the requirements what is assumed to socially accepted (social norms) (Fröhlich, 2010).

4.3.3 Pretest

To gather helpful indications of how to adjust the survey, it was tested with nurses (N=2). To avoid that the same nurses would participate in the pretest and the survey, these nurses did not work in internal medicine. It was not possible to include the recommended number of ≥ 50 participants for the pretest. The small number of pretest-participants is not considered to be problematic in regard of that every scale has already been validated. The following aspects will be checked in the pretest (Raab-Steiner & Benesch, 2011):

Comprehensibility, understanding of used terms, time needed to fill out the survey, layout, adequacy of scaling, response sets (tendencies, social desirability). Two study nurses assessed the survey on their own without assistance of the author. The instructions were communicated by e-mail and the results were also returned this way. The participants received a link to the online-survey and answered the questions with their mind on the aspects earlier mentioned. Their assessment resulted in the following feedback:

- Clear an logical structure of the survey
- Instructions and questions were easy to understand
- There was no point during the survey where the feeling of wanting to quit was overwhelming
- The quantity of questions is rather high but manageable
- Questions vary and are diverse
- Time to fill took approximately 12 minutes
- Critique that it is possible to go through the questionnaire without answering
- Critique about the change of scaling throughout the different scales
- Suggestions how to improve anonymity because the KSA is a medium size hospital and with very little information (e.g. sex and experience) different nurses can already be identified
- Suggestions for chronological structure
- Suggestions for visual design

In order to improve the survey, especially in the field of anonymity, the following adjustments were made:

- The format to answer the questions about age, years of experience and years of being a team member was previously an open answering format. As a result of the pretest this was modified and changed to a scaling with categories (e.g. age: 18-29; 30-39 etc.).
- The chronological structure was slightly modified
- It was programmed that the participants needed to answer every question or check a mark to confirm that this question cannot be answered. There was no mandatory question

because it seemed to be the more expedient to leave the possibility to deny answering a single questions rather than the whole survey.

There was no adaptation of the scaling in order to offer a consistent answering format allover the survey because all the different scales are validated with their specific scaling. Because of that there was restraint to change to a consistent scaling in order to work with a valid instrument. The inconsistent answering formats were therefore accepted although it could cause confusion. To ward off misunderstandings a hint was postulated stating that the answering formats change throughout the survey.

4.3.4 Preparation for Data Analysis

The data was transferred from Questback Unipark to SPSS. First the dropout-data was taken out of the dataset, as well as the participants that filled out the questionnaire before it was rolled-out (e.g. pretest). Also participants who filled out the questionnaire in five or less minutes were eliminated because in this time span it is not possible to read every question, let alone answer carefully. Participants, who chose the same answering option throughout a scale or the whole survey although some of the statements contradicted each other, were excluded. These cases raised the suspicion of „just working quickly through the questionnaire" or „checking out the questions" lead to a bias of the results. After cleaning the dataset it was possible to include 38 nurses (N=38). These participants were divided in n=10 from ward A[6], n=6 from ward B, n=5 from ward C, n=6 from ward D and n=11 from ward E. The following steps will show how the data analysis was navigated.

To be able to do the statistical analysis an adjusted data set was needed. To perform further calculations to answer the research question, it was necessary to create more than one data set (cf. chapter 4.3.5), but previously the data from the survey and the data from the EFFORT-trial had to be merged. To do so the data from EFFORT was prepared in an Excel-sheet and afterwards transferred to SPSS. Two new variables were created (ACCR and ACPR). Every participating patient in the EFFORT-trial was checked for unrealistic values, e.g. caloric intake of 10'000 calories/day. In cases like this the patient was excluded because the intake is improbable and seems to be a typing error. This was done to avoid any biases in following calculations. The scales SAT, EXH and ATT needed to be recoded with the purpose that the highest score measures the strongest confirmation of the variable. The scaling of the variable RAT offered the answering option that the intervention was not necessary. These answers were treated as missing data to avoid a falsification of the mean, median and standard deviation.

[6] Actual ward labels are known by the author, but will not be revealed in this thesis due to anonymity precautions.

4.3.5 Data Analysis

A descriptive analysis of the participants' demographic data was done. A total score of the scale was done in terms of minimum and maximum values, median, mean and standard deviation. In the following passage the study design will be introduced. It is a step-by-step procedure, which will be followed in regard of both aims of this study.

The 1st aim of the statistical analysis is to discover differences between the different unities (=wards). The differences will be investigated by assessing the variables of the conducted survey and the data from the EFFORT-trial. This will be done separately because they are independent inquisition with a different sample (Sample of nurses and sample of patients).

The 2nd aim of the statistical analysis is to find associations between the variables of the nurses' survey and the ACCR, as well as the ACPR of the estimated requirement. The information about caloric and protein requirement, as well as the coverage of every patient will be extracted from the preexisting data-set of the EFFORT-trial which will be provided by the partner at KSA (Kantonsspital Aarau).

The following steps were taken to investigate both aims mentioned above:

In a **1st step** the reliability of the scales in the survey was checked. To do so the Cronbachs α was valued. The Cronbachs α is a common measure of scale reliability (Field, 2009).

In a **2nd step** the distribution of every scale was tested for normality. This procedure is necessary because normal distribution is one of the assumptions that need to be met to do further calculations (cf. 5th step of methodology). The normal distribution was judged by the calculations but also by visually judging the distribution graphs.

The **3rd step** in the methodological procedure the homogeneity of the variables was tested. Homogeneity is necessary for further calculations (cf. 5th step of methodology).

In a **4th step** it was checked if there is a difference between the intervention and the control group in the EFFORT-trial.

In a **5th step** independent variables like (1 & 2 IV) ST and UT, (3 IV) SOS, (4-6 IV) OCC, INF and FA, (7 IV) ATT and (8 IV) RAT and the dependent variables (1 DV) ACCR and (2 DV) ACPR as well as (3 DV) SAT and (4 DV) EXH were investigated. All the IV's are interval-scaled. The DV's are at least interval-scaled. To compare differences this will have to be tested by different groups. There are five groups because every ward represents one group. Because there is more than one IV, an ANOVA for every IV will be done (Langdridge & Hagger-Johnson, 2009). Additionally covariant variables (Age, NRS and BMI) were tested due to differences in between groups and correlations.

To do an ANOVA the following assumptions must be met (Field, 2009):

- Normal distribution of the scores
- The samples must be independent
- Homogeneity between variables, which can be tested by using the Levene's test.

ANOVA was chosen because it is an adequate technique to compare differences in more than two groups, which is the case in this study. This decision is based on the reflections based recommendations of Field (2009).

1. Because the goal is to compare the different hospital wards, there is only one predictor variable on which the differences are based on.
2. The predictor variable is categorically divided in different hospital wards
3. With five hospital wards counting there are therefore more than two counting
4. Different participants are clearly assigned to the different groups (wards)
5. Most of the variables meet the assumptions for parametric testing. The variables that do not meet the assumptions for parametric testing were examined in a Kruskal-Wallis-Test.

In a **6th step** all the variables were tested for their association. After an output of the scatter plots, and a visual analysis bivariate correlation analysis was done. Furthermore all variables were analyzed in a simple regression analysis to detect dependencies of variables. To proceed with the analysis and to detect a possible model in regression, a multiple regression analysis was computed. To do a regression analysis the following assumptions had to be checked in the process (Field, 2009; UZH, 2015):

- IV's and DV's are at least interval-scaled
- Normal distribution of variables
- Linear regression between IV and DV
- No or little multicollinearity [7]
- No auto-correlation
- Homoscedasticity[8]

To analyze the associations between the survey-variables and the EFFORT-variables, three approaches were tried. The first approach is a testing based on the level wards (N=5). Because on level ward it is only possible to achieve a small sample-size of N=5 the power is limited. Therefore

[7] Multicollinearity states that there should not be a perfect linear relationship between the independent variable (Field, 2009).
[8] Homoscedasticity states that the variance of the residual terms should be constant at each level of the independent variable (Field, 2009).

two further approaches were tested. The second approach was done based on level nurses in the survey. A larger sample number of N=38 was reached. The data from the EFFORT-trial (=patients' data) is bloated because there are only five means for the ACCR and ACPR available. The common variable **Ward** assigned the means to each nurse. The third approach to solve the problem of matching patients with nurses was done on level EFFORT-ID (EFFORT-ID = number assigned to each patient). Opposite to the second approach the scores from the nurses survey can be only included by their mean per ward. This concerns all subscales from the construct organizational stressors, social stressors, both subscales concerned with time pressure as well as the variables ATT, RAT, SAT and EXH.

5 Results

5.1 Description of Sample

The age of the participants ranged from the category 20-29 to 50-59 years old. 40 % (*N = 15*) were 20-29 years old, 37 % (*N = 14*) were 30-39 years old, 21% (*N = 8*) were 40-49 years old and only 3 % (*N = 1*) were 50-59 years old. None of the nurses were older than 59 years old. 21 % (*N = 8*) of the nurses were male and 79 % (*N = 30*) female. Every ward differed in the strength of participation. A had 10, B had 6, C had 5 (one less than targeted), D had 6 and E had 11 participants. . All in all 38 nurses took part in the study and filled out the online survey. The link for online participation was shared by the head nurse of every ward with an explanation of why it is important to be part of this study. In consideration of work experience the distribution showed that 26 % have a work experience of 1-5 years (*N = 10*), 21% are on the job for 6-10 years (*N = 8*) and 18 % are working since 11-15 years (*N = 7*). 16 % (*N = 6*) have been working for 16-20 years and also 16 % (*N = 6*) for 21-25 years. Only 3 % (*N = 1*) has been working on the job for 26-30 years. The employment level ranges from 20-100 percent whereas 42 % (*N = 16*) work 100 percent. The minimum duration working for the current team was targeted at three months, which nobody undercut.

The age of patients ranged from a minimum of 18 to a maximum of 109 years old with an average of 74.6 years of age (*SD = 15.1 years*). The NRS ranged from a minimum of three to a maximum of six points with an average of 4.1 points (*SD = 0.84 points*). All were hospitalized on a ward of internal medicine. The difference between the intervention and control group was checked there were no differences concerning ACCR and ACPR in between groups. Therefore all patients from both groups were included in this study.

5.2 Reliability

All variables except for ATT reached an acceptable or good Cronbachs α. In case of RAT*,* SOS*,* ST *and* SAT no items were deleted because it was not possible to increase the Cronbachs α by deleting any of the items. In case of the variable UT no item was deleted due to improving the Cronbachs α because the scale already only contains two items.

The subscales of organizational stressors (OCC, INF and FA) presented no invalid cases (N=38). A Cronbachs α could not been calculated because each of the three items stands for an independent subscale. The scale EXH reached an acceptable Cronbachs α. Although the exclusion of one item („Die Belastung durch meine Arbeit ist ganz gut zu ertragen") would have optimized the Cronbachs α to a .808 this was not performed because the item seemed to be a valid and important asset in the whole scale to measure if the participants are exhausted or not. The scale *Attitude toward nutritional Interventions* showed 37 of 38 valid cases and a Cronbachs α of .416, which is unsatisfying but did not improve by deleting any of the 16 items.

Table 2: Reliability

Scale	Cronbachs α
Attitude towards Nutritional Interventions	**.416**
Specific Time Pressure	.720
Unspecific Time Pressure	.746
Occupancy	--
Uncertain Information Flow	--
Fluctuation/Absenteeism	--
Social Stressors	.769
Exhaustion	.775
Work Satisfaction	.800
Implicit Rationing	.841

Note. N=38; >.70 = fair, >..80 = good (Field, 2009).

5.3 Assumptions

5.3.1 Normal distribution of the Survey Variables

The Shapiro-Wilk test was used to assess if the data is normally distributed or not (see Appendix C). The null hypothesis states that all the samples come from a normal distribution. The percentage on the SPSS attitude towards nutrition, D (38) = 0.963, p > 0.5 indicates that there is no significant

difference from a normal distribution. The percentage on the SPSS the variable RAT, *D* (38) = 0.967, *p* > 0.5 indicates that there is no significant difference from a normal distribution. The variables OCC, *D* (38) = 0.904, *p* < 0.5, INF *D* (38) = 0.840, *p* < 0.5 and FA *D* (38) = 0.874, *p* < 0.5 indicate that there is a significant difference from normal distribution. The percentage on the SPSS the variable SOS, *D* (38) = 0.966, *p* > 0.5 indicates that there is no significant difference from a normal distribution. The percentage on the SPSS the variable UT, *D* (38) = 0.947, *p* > 0.5 indicates that there is no significant difference from normal distribution. The percentage on the SPSS the variable ST, *D* (38) = 0.933, *p* < 0.5 indicates that there is a significant difference from normal distribution. The percentage on the SPSS the variable SAT, *D* (38) = 0.944, *p* > 0.5 indicates that there is no significant difference from a normal distribution. The percentage on the SPSS the variable EXH, *D* (38) = 0.952, *p* > 0.5 indicates that there is no significant difference from a normal distribution. The null hypothesis needs to be rejected in the cases of OCC, INF, FA and ST.

The Shapiro-Wilk test has its limitations. A significant or non-significant test is not necessarily accurate to estimate the deviation from normality and therefore it is possible that this leads to biases in further tests. It is recommended to visually assess histograms and plots (Field, 2009). Following the histograms of the different variables are shown and interpreted in their normality. Except for the variable INF all variable have a fairly normal distribution (see Appendix C). INF is positively skewed and cannot be considered normally distributed (see Figure 1).

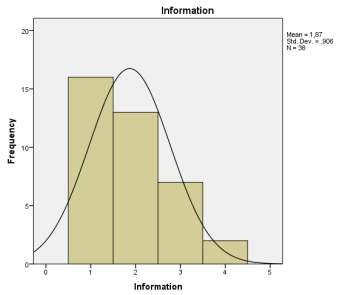

Figure 1: Histogram for Uncertain Information Flow

5.3.2 Normal distribution of the EFFORT-trial Variables

In a further step the normal distribution of the patient data concerning energy and protein intake was analyzed. To do so, the Shapiro-Wilk test was used to evaluate if the data can be considered normally distributed or not. According to the Shapiro-Wilk test the *p*-value of the ACCR of patients in internal medicine is higher than the chosen alpha-level of .05 and therefor the null hypothesis is rejected. The ACCR is considered normally distributed. Other than ACCR, ACPR is not normally distributed, because the *p*-value is lower than the chosen alpha-level of .05 the null hypothesis is not rejected and the data is considered not normally distributed. The percentage on the SPSS the variable Age, *D* (117) = 0.887, *p* < 0.5 indicates that there is a significant difference from a normal

distribution and therefore the variable is considered non-normally distributed. The variable NRS is not normally distributed according results of the Shapiro-Wilk test. Because the *p*-value is lower than the chosen alpha-level of .05 the null hypothesis is not rejected and the data is not considered normally distributed. The percentage on the SPSS the variable BMI, D (118) = 0.952, $p < 0.5$ indicates that there is a significant difference from a normal distribution. The variable BMI cannot be considered normally distributed.

Both variables concerned with nutrition extracted from the EFFORT-trial (ACCR and ACPR) also show a fair distribution in the visual assessment of the histograms. The variables NRS, BMI and Age are visually judged also fairly normally distributed (see Appendix C).

5.3.3 Test for Homogeneity of Variance

Besides normally distributed data it is also necessary to have homogeneity of variance to perform an accurate ANOVA. To check the assumption of homogeneity of variance a Levene's test was conducted. The null hypothesis states that the variances are inhomogeneous. The variables OCC, INF, FA, SOS, ST and UT were tested for homogeneity of variances (Field, 2009). Except for the variable SAT all variables met the assumption of homogeneity because their result was not significant which means that the null hypothesis can be rejected (see Appendix D).

The sample collected from the EFFORT-data was also tested for homogeneity of variances by doing a Levene's test. The variables ACCR, ACPR, BMI, NRS met the requirement of homogeneity of variances. The variable Age is according to the results not homogenous in variance, because the result is significant which signifies that the null hypothesis (inhomogeneity of variances) cannot be rejected (see Appendix D).

5.4 Descriptive Statistic of Survey Scales

All the scales explored in the survey are shown in Table 3 (also see Appendix E). The scales with a scaling of four and five answering possibilities are visually separately with a thick line. The results in Table 3 are descriptive and contain every participant. The following description of the descriptive statistic is based on the survey scaling (cf. chapter 4.1). The mean score of RAT expresses that rationing is done seldom, whereas the mean score of EXH expresses a tendency towards rather being exhausted. Considering the variable SAT, nurses express to be satisfied. The mean scores of the stressor variables indicate that INF and SOS and UT do rather not take place. In variable FA the teams reached a higher mean score tending to that it happens sometimes. Also the variables OCC and ST show a mean between the meaning of "rather not" and "sometimes". The mean score of the ATT has a tendency towards positive attitude. All standard deviations are below 1.0. According to the

maximum and minimum score of every scale no one reached the lowest score in the variables RAT, SAT and ATT and no one reached the highest scores considering the variables RAT, EXH, INF, FA, SOS, UT, ST and ATT.

Table 3: Descriptive Statistic of the Survey Variables

Scale	*Scaling*	*M*	*SD*	*Min*	*Max*
RAT	4	1.893	.475	1.15	3.09
EXH	4	2.259	.464	1.00	3.25
SAT	4	3.180	.372	2.43	4.00
INF	5	1.870	.906	1.00	4.00
SOS	5	1.993	.491	1.00	3.00
UT	5	2.105	.552	1.00	3.00
FA	5	2.420	.948	1.00	4.00
OCC	5	2.630	.970	1.00	5.00
ST	5	3.145	.761	1.00	4.50
ATT	5	3.565	.348	2.75	4.31

Note. N=38; Descriptive statistic including M = Mean; SD = Standard Deviation, Min. = Minimum Score (based on scales not items), Max. = Maximum Score (based on scales not items); thick line separates scales with four and five-type scaling.
SAT=Work Satisfaction; EXH=Exhaustion; SOS=Social Stressors; RAT=Implicit Rationing; ATT=Attitude towards Nutritional Interventions; OCC=Occupancy; INF=Uncertain Information Flow; FA=Fluctuation/Absenteeism; ST=Specific Time Pressure; UT=Unspecific Time Pressure

5.5 Differences between groups

5.5.1 Survey Variables

First the degree of organizational stressors per ward will be illustrated. As shown in Figure 2 the variable OCC the mean score of OCC ranges from a score of 2.0 – 3.4, whereas 1 represents low and 5 strong confirmation of OCC. Ward B exhibits the lowest, whereas ward C has the highest manifestation in the variable of OCC. One outlier representing very high occupancy is visible in ward A. In Figure 2 the variable INF is presented. The mean of uncertainty in information flow ranges from a score of 1.5 – 2.8, whereas 1 represents low and 5 strong confirmation of uncertainty in information flow. Ward B reaches the lowest and ward C the highest average score. In Figure 2 the variable FA is presented. The mean score of FA ranges from a score of 1.7 – 3.4, whereas 1 represents low and 5 strong confirmation of FA. Ward B reaches the lowest and ward C the highest average score.. Outliers are obvious in ward D and E. In ward D the outlier represents denial of fluctuation or absenteeism as in ward E two outliers indicate denial and one indicates strong confirmation of the variable.

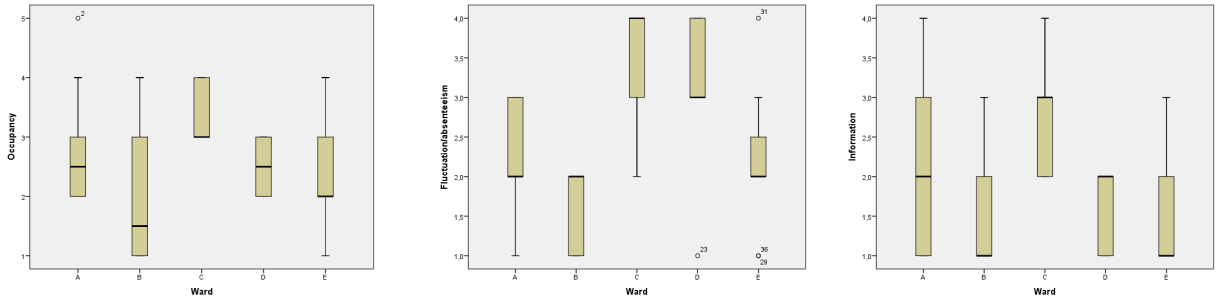

Figure 2: Boxplots Organizational Stressors

In Figure 3 the degree of time pressure related stressors are shown. The mean of the variable UT ranges from a score of 1.9 – 2.8 and the mean score of the variable ST ranges from 2.8 – 3.6 whereas 1 represents low and 5 strong confirmation of time pressure. Figure 3 displays that ward A reaches the lowest and ward C the highest score. It is also shown that ward E experiences the least, and ward C the highest extent of of the variable UT. Regarding the variable ST only one outlier is obvious with a strong tendency of denying specific time pressure. Regarding the variable UT two outliers are visible. One outlier is in the field of strong confirmation of the variable UT whereas one outlier indicates denial of the variable during work.

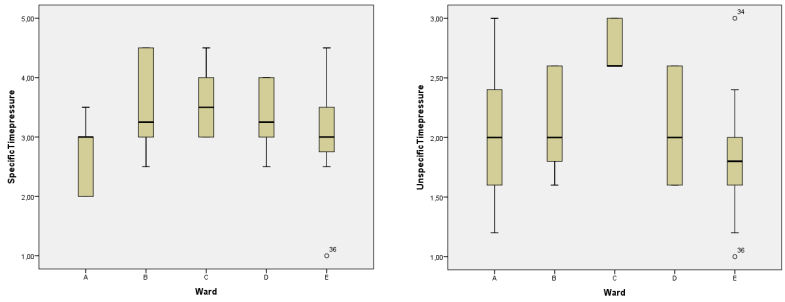

Figure 3: Boxplots Time Pressure

In Figure 4 the degree of the variable SOS per ward is shown. The mean score of the experienced social stressors of the nurses of all the internal medicine wards ranges from a score of 1.7 – 2.7, whereas 1 represents low and 5 strong confirmation of the variable SOS. The graph shows that the nurses from ward C experience the most social stressors whereas the nurses working at ward B the lowest. One high and two low outliers occur in ward A.

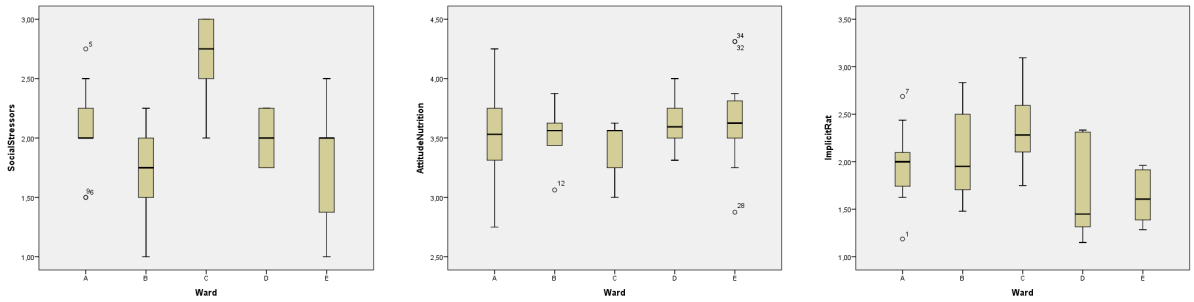

Figure 4: Boxplots Social Stressors, Attitude and Implicit Rationing

In Figure 4 the level of attitude towards nutritional intervention per ward is shown. The mean score of the variable ATT of the nurses of all the internal medicine wards ranges from a score of 3.4– 3.7, whereas 1 represents negative and 5 positive attitude towards nutritional intervention. Figure 4 shows that the nurses from ward C answered with the lowest mean score of ATT whereas the nurses working at ward E reached the highest score of ATT. Outliers appear in ward B towards negative attitude and three more outliers emerged in ward E whereas two of them tend to a strongly positive attitude and one shows a tendency towards negative attitude towards nutritional interventions.

In Figure 4 the variable RAT is presented. The mean score of RAT ranges from a score of 1.6 – 2.4, whereas 4 stands for frequent rationing of nursing care and 1 for no rationing of nursing care. The graph shows that the nurses from ward C show the highest mean score of RAT whereas the nurses working at ward E have the lowest score of RAT. Outliers appear in ward A. One outlier points toward a high score of RAT and one reached an outlying low score.

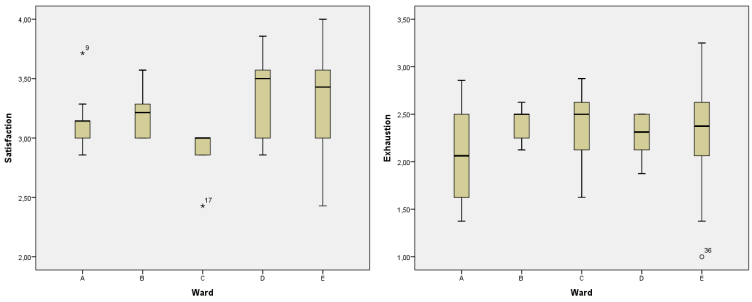

Figure 5: Boxplots Satisfaction and Exhaustion

In Figure 5 the level of the variable SAT per ward is displayed. The mean score of SAT ranges from 2.9 – 3.4, whereas 1 stands for work dissatisfaction and 4 for work satisfaction. Figure 5 shows that the nurses from ward C show the lowest and the nurses from ward D with the highest mean score of SAT. Outliers appear in groups ward A and ward C. In ward A, a far outlier towards satisfaction and in ward C a far outlier toward dissatisfaction appears.

In Figure 5 the level of the variable EXH per ward is shown. The mean score of EXH of the nurses of all the internal medicine wards ranges from a score of 2.1 – 2.4, whereas 1 stands for low exhaustion and 4 for strong exhaustion. Figure 5 demonstrates that the nurses from ward A show the lowest and the nurses from ward B the highest average score of EXH. One outlier appears in ward E in the field of low exhaustion.

5.5.2 EFFORT-data

In Figure 6 the distribution of calorie intake per ward is shown. The mean score of the variable ACCR of the patients ranges from a coverage of 62% - 83%. The graph shows that ward D has the highest

and ward B the lowest coverage of calorie requirement. No outliers can be observed in the graph representing ACCR.

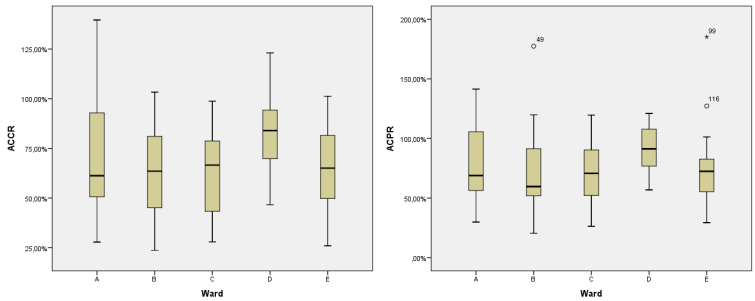

Figure 6: Boxplots ACCR and ACPR

In Figure 6 the distribution of protein intake per ward is shown. The mean of the variable ACPR of all the patients ranges from coverage of 68% - 92%. The graph demonstrates that ward D has the highest coverage of protein requirement. Outliers are visible concerning ward B and E. In the graph representing ACPR a far outlier towards high ACPR can be observed concerning ward E.

5.6 One-way ANOVA

To test for the difference between the different wards of internal medicine (A, B, C, D and E) an ANOVA was conducted. This procedure was chosen because the ANOVA is used to compare the differences in more than two groups, which is the case in this study due to the five different wards (Field, 2009).

5.6.1 ANOVA with Survey Variables

According to Table 4 there is there is no significant effect of wards on levels of OCC, $F(4,33) = 1.65$, $p < .05$., but there is a significant effect of wards on levels of FA $F(4,33) = 4.07$, $p < .05$. There is a significant effect of wards on levels of SOS, $F(4,33) = 4.4$, $p < .05$. There is no significant effect of wards on levels of ST, $F(4,33) = 1.77$, $p < .05$ but there is a significant effect of wards on levels of UT, $F(4,33) = 2.8$, $p < .05$.

Table 4: ANOVA Work Stressors

		df	F	Sig.
OCC	Between Groups	4	1.653	.185
	Within Groups	33		
	Total	37		
FA	Between Groups	4	4.073	**.009**
	Within Groups	33		
	Total	37		
SOS	Between Groups	4	4.396	**.006**
	Within Groups	33		
	Total	37		
ST	Between Groups	4	1.773	.158
	Within Groups	33		
	Total	37		
UT	Between Groups	4	2.797	**.042**
	Within Groups	33		
	Total	37		

Note. N=38; ANOVA test; Grouping variable: Ward. $p<.05$.
SOS=Social Stressors; OCC=Occupancy; FA=Fluctuation/Absenteeism; ST=Specific Time Pressure; UT=Unspecific Time Pressure

According to Table 5 there is a significant effect of wards on levels of RAT, $F(4,33) = 3.25$, $p < .05$. There is no significant effect of wards on levels of ATT, $F(4,33) = 0.54$, $p < .05$. There is no significant effect of wards on levels of EXH, $F(4,33) = 0.45$, $p < .05$.

The ANOVA reveals that the variables RAT, FA, SOS and UT significantly differ on different level of wards at a significance level of 0.05 (2-tailed). There is no statistical significant difference in the score achieved in the variables OCC, UT, ST, ATT, as well as EXH.

Table 5: ANOVA Nurse-sensitive factors and Exhaustion

		df	F	Sig.
ATT	Between Groups	4	.541	.707
	Within Groups	33		
	Total	37		
RAT	Between Groups	4	3.246	**.024**
	Within Groups	33		
	Total	37		
EXH	Between Groups	4	.450	.772
	Within Groups	33		
	Total	37		

Note. N=38; ANOVA test; Grouping variable: Ward. $p<.05$. EXH=Exhaustion; RAT=Implicit Rationing; ATT=Attitude towards Nutritional Interventions;

Because the variables SAT and INF did not meet the assumptions of parametric testing a Kruskal-Wallis-Test was conducted. SAT was not significantly affected by the division of wards, $H(4) = 6.535$, $p < .05$. Also the variable INF no significant result $H(4) = 6.997$, $p < .05$ (see Table 6).

Table 6: Kruskal Wallis Test of Satisfaction and Uncertain Information Flow

	SAT	INF
Chi-Square	6.535	6.997
df	4	4
Asymp. Sig.	.163	.136

Note. N=38; Kruskal Wallis Test; Grouping variable: Ward. $p<.05$. SAT=Satisfaction; INF=Uncertain Information Flow

5.6.2 ANOVA with EFFORT-data

As shown in Table 7 there was a significant effect of wards on levels of ACCR, $F(4,113) = 2.56$, $p < .05$. ACPR did not reveal a significant effect, $F(4,109) = 1.87$, $p < .05$.

The ANOVA revealed that ACCR significantly differs on different level of wards at a significance level of 0.05 (2-tailed) and ACPR did not significantly differ on different level of wards at a significance level of 0.05 (2-tailed). Both variables BMI and NRS did not significantly differ on different level of wards at a significance level of 0.05 (2-tailed).

Table 7: ANOVA of ACCR, ACPR, BMI, NRS

		df	F	Sig.
ACCR	Between Groups	4	2.561	**.042**
	Within Groups	113		
	Total	117		
ACPR	Between Groups	4	1.869	.121
	Within Groups	109		
	Total	113		
BMI	Between Groups	4	.959	.433
	Within Groups	113		
	Total	117		
NRS	Between Groups	4	.959	.411
	Within Groups	113		
	Total	117		

Note. N=114-118; ANOVA test; Grouping variable: Ward. $p<.05$.

Because the variable Age did not meet the assumptions of parametric testing, a Kruskal-Wallis-Test was conducted. There is no significant difference visible in the variable Age of malnourished patients (see Table 8).

Table 8: Kruskal Wallis Test of the variable Age

	Age
Chi-Square	1.151
df	4
Asymp. Sig.	.886

Note. N=118; Kruskal Wallis Test; Grouping variable: Ward. $p<.05$.

5.7 Bivariate Correlation Analysis

In this chapter bivariate correlation analysis will be presented. Because the individual data of patients cannot be linked to an individual nurse it is not possible to analyze the bivariate correlations on an individual level be it nurses nor patients. Therefore, three different approaches had to be examined to investigate the relationship between the findings in the survey and the findings gathered from the EFFORT-trial.

5.7.1 Correlation Analysis based on Data set „Ward"

The first approach was to assemble a data set based on the one similar variable in both data sets and this joint variable was defined to be the hospital ward. Therefore the number of cases was reduced to an N=5.

As shown in Table 9, ACCR and ACPR correlate positively with each other at a 0.05 level (2-tailed). Further considering the results of ACCR there are tendencies of correlations. ACCR tends to correlate positively with the variables SAT, FA and ATT. A negative tendency of correlation can be found between ACCR and EXH, SOS, ST, UT, OCC and INF. Considering the results of ACPR, tendencies of positive correlations with the same variables consistent with ACCR can be found. The variables BMI, NRS and Age do not correlate with ACCR and ACPR.

Considering other variables there is a significant positive correlation between SAT and ATT at a 0.05 level (2-tailed). A negative correlation can be found between the variable SAT with RAT and INF, both at a level of 0.05 (2-tailed). EXH correlates positively with ST at a level of 0.05 (2-tailed). SOS correlates positively with OCC (0.05 level, 2-tailed), INF (0.01 level, 2-tailed) and UT (0.05 level, 2-tailed). RAT correlates negatively with ATT at a 0.01 level (2 tailed). UT correlates negatively with ATT at a level of 0.05 (2-tailed) and INF at a level of 0.05 (2-tailed). No further correlations became apparent in the output of results (see Table 9).

5.7.2 Correlation Analysis based on Data set „Nurses in Survey"

The second approach to put together a common data-set of both the scores of the nurses survey and the data from the EFFORT-trial was a data set based on the different nurses that were included in the survey. As shown in Table 10, the variables ACCR and ACPR correlate positively at a level of 0.01 (2-tailed). There is also a positive correlation of ST (0.01 level, 2-tailed) and UT (0.05 level, 2-tailed) with RAT. RAT correlates also negatively with SAT (level 0.01, 2-tailed). SAT on the other hand correlates negatively with EXH (level 0.01, 2-tailed), SOS (level 0.01, 2-tailed), OCC (level 0.05, 2-tailed), ST and UT (both level 0.01, 2-tailed). EXH correlates positively with SOS (level 0.01, 2-tailed) and also with ST and UT (both level 0.01, 2-tailed). SOS correlates positively with OCC (level 0.01, 2-tailed), INF (level

0.01, 2-tailed), FA (level 0.01, 2-tailed), ST and UT (both at level 0.01, 2-tailed). Furthermore OCC correlates positively with FA and UT (both at level 0.01, 2-tailed). INF correlates positively with UT (level 0.01, 2-tailed) and FA also correlates positively with UT (level 0.01, 2-tailed). Furthermore UT correlates with ST (level 0.05, 2-tailed) (see Table 10).

5.7.3 Correlation Analysis based on Data set „Patients in EFFORT-trial“

The third and final approach to calculate regression was to do the calculation on the basis of the different patients. In the end this data set was the one with the most cases (N=118) but it also meant that the data (concerning the nurses survey) were bloated. The variables ACCR and average ACPR correlate positively at a level of 0.01 (2-tailed). ACPR also correlates positively with SAT (level 0.05, 2-tailed). No other correlations (except with each other) were found concerning the variables ACCR and ACPR (see Table 11). The variables Age and NRS do not correlate with ACCR and ACPR. BMI correlates negatively with ACPR at a level of 0.01 (2-tailed).

Table 9: Correlations on level *Wards*

Scale		1	2	3	4	5	6	7	8	9	10	11	12
1	**ACCR**	1.00											
2	**ACPR**	.957*	1.00										
3	**SAT**	.602	.766	1.00									
4	**EXH.**	-.334	-.462	-.162	1.00								
5	**SOS**	-.026	-.272	-.807	.003	1.00							
6	**RAT**	-.522	-.699	-.879*	.373	.677	1.00						
7	**ATT**	.424	.620	.879*	-.317	-.747	-.992**	1.00					
8	**OCC**	-.219	-.437	-.776	-.250	.938*	.502	-.570	1.00				
9	**INF**	.400	.153	-.906*	-.008	.978**	.750	-.801	.946*	1.00			
10	**FA**	.505	-.320	-.429	-.048	.869	.277	-.377	.814	.756	1.00		
11	**ST**	-.096	-.473	-.308	.906*	.351	.521	-.514	.053	.287	.337	1.00	
12	**UT**	-.211	-.462	-.857	.341	.916*	.876	-.915*	.745	.911*	.695	.626	1.00

Note. N=5; Pearson Correlation; *p<.05, **p<.01 (2-tailed)
SAT=Work Satisfaction; EXH.=Exhaustion; SOS=Social Stressors; RAT=Implicit Rationing; ATT=Attitude towards Nutritional Interventions; OCC=Occupancy; INF=Uncertain Information Flow; FA=Fluctuation/Absenteeism; ST=Specific Time Pressure; UT=Unspecific Time Pressure

Table 10: Correlations on level *Nurses*

Scale		1	2	3	4	5	6	7	8	9	10
1	**SAT**	1.00									
2	**EXH.**	-.454**	1.00								
3	**SOS**	.568**	-.447**	1.00							
4	**RAT**	.479**	-.253	.308	1.00						
5	**ATT**	-.027	-.201	-.067	-.197	1.00					
6	**OCC**	.335*	-.233	.590**	.293	.013	1.00				
7	**INF**	.409*	-.105	.438**	.073	-.131	.251	1.00			
8	**FA**	.287	-.159	.470**	.224	-.103	.438**	.318	1.00		
9	**ST**	.524**	-.680**	.346*	.441**	.142	.257	.048	.213	1.00	
10	**UT**	.437**	-.380*	.681**	.335*	-.154	.539**	.483**	.357*	. .394*	1.00

Note. N=38; Pearson Correlation; *p<.05, **p<.01 (2-tailed); ACCR and ACPR are not displayed in this figure due to no additional observations.
SAT=Work Satisfaction; EXH.=Exhaustion; SOS=Social Stressors; RAT=Implicit Rationing; ATT=Attitude towards Nutritional Interventions;
OCC=Occupancy; INF=Uncertain Information Flow; FA=Fluctuation/Absenteeism; ST=Specific Time Pressure; UT=Unspecific Time Pressure

Table 11: Correlations on level *Patients*

Scale		1	2	3	4	5	6	7	8	9	10	11	12
1	**ACCR**	1.00											
2	**ACPR**	.783**	1.00										
3	**SAT**	.159	.185*	1.00									
4	**EXH.**	-.100	-.120	-.124	1.00								
5	**SOS**	.007	-.057	-.813**	-.040	1.00							
6	**RAT**	-.134	-.165	-.859**	.350**	.659**	1.00						
7	**ATT**	.105	.144	.861**	-.287**	-.731**	-.992**	1.00					
8	**OCC**	-.003	-.049	-.766**	-.307**	.931**	.453**	-.525**	1.00				
9	**INF**	-.045	-.097	-.905**	-.058	.979**	.723**	-.777**	.940**	1.00			
10	**FA**	.118	.043	-.459**	-.072	.878**	.277**	-.376**	.826**	.776**	1.00		
11	**ST**	-.034	-.085	-.287**	.914**	.302**	.516**	-.499**	-.014	.239**	.293**	1.00	
12	**UT**	-.047	-.109	-.851**	.320**	.905**	.874**	-.911**	.709**	.896**	.698**	.610**	1.00

Note. N=114-118; Pearson Correlation; *p<.05, **p<.01 (2-tailed)
SAT=Work Satisfaction; EXH.=Exhaustion; SOS=Social Stressors; RAT=Implicit Rationing; ATT=Attitude towards Nutritional Interventions; OCC=Occupancy; INF=Uncertain Information Flow; FA=Fluctuation/Absenteeism; ST=Specific Time Pressure; UT=Unspecific Time Pressure

5.8 Simple Regression Analysis

The bivariate correlation model already showed no significant results concerning the correlations between the independent variables OCC, INF, FA, SOS, ST, UT, RAT and ATT with the dependent variables ACCR and ACPR (cf. chapter 5.7). Also in regression analysis no significant regression equations could be found predicting ACCR or ACPR.

In case of the dependent variables SAT and EXH, simple linear regression analyses were calculated. None of the variables violated the assumption auf autocorrelation, which was judged by a Durbin-Watson test. Visually judging the scatter plots (see Appendix F) no variable violates the assumption of homoscedasticity strongly and the linearity of the variables can be assumed sufficient. No regression analysis was conducted to examine the variable INF because this it did not meet the assumptions for further calculations (no normal distribution).

First a calculation to predict work satisfaction based on specific time pressure was done. A significant regression equation was found ($F(1,36)= 13.594$, $p < .001$), with an $R2_{adjusted}$ of .254. Work satisfaction decreased .256 for each score of specific time pressure. A simple linear regression was calculated to predict work satisfaction based on unspecific time pressure. A significant regression equation was found ($F(1,36)= 8.502$, $p < .006$), with an $R2_{adjusted}$ of .169. Work satisfaction decreased .295 for each score of unspecific time pressure. A further calculation to predict work satisfaction based on occupancy was done. A significant regression equation was found ($F(1,36) = 4.539$, $p < .040$), with an $R2_{adjusted}$ of .087 work satisfaction decreased .128 for each score of occupancy. A calculation to predict work satisfaction based on social stressors was done. A significant regression equation was found ($F(1,36) = 17.173$, $p < .000$), with an $R2_{adjusted}$ of .304. Work satisfaction decreased .431 for each score of social stressors. The last significant simple linear regression to predict work satisfaction was done based on implicit rationing. A regression equation ($F(1,36)= 10.724$, $p < .002$), with an $R2_{adjusted}$ of .208 was found. Work satisfaction decreased .376 for each score of implicit rationing. No significant regression equation was found in the variables FA and ATT to predict work satisfaction.

A simple linear regression was calculated to predict exhaustion based on specific time pressure. A significant regression equation was found ($F(1,36)= 30.966$, $p < .000$), with an $R2_{adjusted}$ of .447. Exhaustion increased .414 for each score of ST. A simple linear regression was calculated to predict exhaustion based on unspecific time pressure. A significant regression equation was found ($F(1,36)= 6.065$, $p < .019$), with an $R2_{adjusted}$ of .120. Exhaustion increased .319 for each score of unspecific time pressure. A simple linear regression was calculated to predict exhaustion based on social stressors. A significant regression equation was found ($F(1,36) = 8.992$, $p < .005$), with an $R2_{adjusted}$ of .178. Exhaustion increased .422 for each score of social stressors. No significant regression equation was

found in the variables OCC, FA and ATT and RAT to predict exhaustion. See Appendix G for detailed information about the simple regression analysis.

5.9 Multiple Regression Analysis

A stepwise multiple linear regression analysis was calculated to predict ACCR based on all the IV's in this study. In the data sets *Ward, Nurses* and *EFFORT-ID,* no significant multiple regression equations were found to predict ACCR or ACPR (see Appendix H).

Multiple linear regression analysis was used to develop a model for predicting nurses' satisfaction from their work stressors, extent of rationing of nursing care and attitude. As shown in Table 12, the model includes the variables SOS and ST and is statistically significant, ($F(1,36) = 17.173$, $p < .000$), and accounted for approximately 30% of the variance of work satisfaction ($R2_{adjusted} = 30.4$). None of the IV's violated the assumption of multicollinearity according to the collinearity diagnostics in SPSS done by judging the variance inflation factor (VIF) whereas the critical factor to where multicollinearity can be expected was determined to be >3 (Field, 2009). Also the assumption of homoscedasticity was not violated judging by the scatter plot (see Appendix J).

Table 12: Multiple Regression Model

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	**Std. Error**	**Beta**	t	**Sig.**	Tolerance	VIF
1	(Constant)	4.039	.213		18.946	.000		
	SOS	-.431	.104	-.568	-4.144	.000	1.000	1.000
2	(Constant)	4.416	.239		18.506	.000		
	SOS	-.333	.102	-.440	-3.276	.002	.881	1.136
	ST	-.182	.066	-.371	-2.767	.009	.881	1.136

Note. N=38; the dependent variable for the regression analysis was work satisfaction. SOS = Social Stressors; ST = Specific Time Pressure

Multiple linear regression analysis was used to develop a model for predicting nurses' exhaustion due to their work stressors, extent of rationing of nursing care and their attitude towards nutritional interventions. No additional finding including multiple independent variables was found.

6 Discussion

The findings of this study will be discussed in this chapter whereas it will be subdivided into descriptive statistic, differences between hospital wards and the correlations and regressions of the investigated variables.

6.1 Discussion of Descriptive Statistic

The descriptive statistic shows, that work satisfaction is good although the mean score of exhaustion tends to point to mild exhaustion. Implicit rationing is obviously something that occurs but not at a high extent. The work stressors seem to occur but no in their extreme. A pleasant result was achieved in the attitude variable. Attitude towards nutritional interventions is good and is in context of this study a positive outcome. Furthermore it is encouraging that in none of the variables, an alarming result appeared. Because according to Schüpbach (2013) a positive result in work satisfaction does not necessary lead to motivated staff and is also not a one-dimensional construct, the fact that the staff is also tending to be exhausted needs to be considered. The results indicate, that not every work stressor occurs at a same level of extent. Occupancy reached the highest mean score and should therefore be addressed in procedural restructuring.

6.2 Discussion of Differences

One of the main findings of this study is that differences in between hospital wards of internal medicine exist and need to be explained. These differences were found in stressor variables (fluctuation/absenteeism, social stressors and unspecific time pressure) and also in the variable implicit rationing. It becomes obvious, that ward C achieved the lowest scores in every nurse-sensitive factor. The fact that ward C also achieved the lowest score in work satisfaction is consistent with the assumption that high work stressors can lead to low satisfaction at work. This result is not representative because only five nurses filled out the survey, but it still needs to be acknowledged. It is interesting that despite of the difference in the intensity of experienced work stressors, work satisfaction and exhaustion seem not to vary strongly. Also the attitude towards nutritional interventions does not significantly differ from one team to another. Because attitude seems to be quite similar in every team, it is reasonable to assume that all teams working on an internal medicine ward have a similar understanding of the importance of nutritional interventions. The average score in attitude represents a tendency to positive attitude towards nutritional interventions, which might be an indication that the teams share a fundamental understanding of nursing and the importance of nutrition because they are all working in the same discipline. Nurses from the same clinic also participate in the same training sessions and postgraduate professional education and have a similar

professional background, which might be the cause that these nurses are more alike compared to nurses working in other fields. Work stressors and rationing of nursing care can be influenced by many other factors than just a mutual understanding of nursing care and therefore are more likely to differ from one ward to another. For example the fact that a private ward has additional support with room service staff relieving nursing staff of tasks like ordering and serving menus. This can be an important resource to handle daily challenges in nursing care.

Looking at the EFFORT-data the calculations show that only in ACCR a difference between wards becomes evident. All the other variables like ACPR, Age, BMI and NRS have no significant variation in between wards. The different results of ACCR and ACPR can be reasoned by the fact that protein supplements are very common in malnourished patients (Felder et al., 2014; Baumann et al, 2012). Although some patients manage to reach their protein requirement they might still not be able to achieve to meet the goal of their caloric need. The assumption can be supported by the comparison of the results of the average intake of proteins and calories, where it becomes obvious that the ACPR is higher than the ACCR. The fact that Age, BMI and NRS do not significantly differ between the five hospital wards can be explained due to the fact that the patients sample of all the internal medicine wards is expected to be very similar and also because the collected sample of patients was randomized for this trial.

The fact that ward B achieved good score in nurse-sensitive factors and the lowest in ACCR contradicts the previous assumption, although this result is merely an observation and no conclusive generalization of a failed model.

6.3 Discussion of Correlations and Regressions

6.3.1 The Affect on Nutrition

According to Field (2009) it is not possible to make an assumption based on bivariate correlations about how two variables are connected but the analysis shows that there are significant correlations in between certain variables. No significant correlations can be discovered with the variable ACCR. Considering the second nutrition-oriented variable (ACPR) one correlation becomes evident. The correlation between ACPR and work satisfaction is a positive one. The result can be interpreted that if satisfaction with work increases, protein intake also improves or the other way around. Therefore it can be assumed that nutritional interventions concerning protein supplements seem to increase if nurses are satisfied with their daily work and their prospects of work. This kind of connection cannot be shown in ACCR. A possible explanation is that nutritional interventions like ONS contain a high amount of proteins compared to the total need of patients whereas it is harder to achieve coverage of calories.

ACCR and ACPR show tendencies to correlate with nurse-sensitive factors. Except for fluctuation/absenteeism, the tendencies correspond with the previous assumptions, that nutritional intake decreases if work stressors increase (and the other way around). It is probable that there is an impact of nurse-sensitive factors on the implementation of nutritional interventions. Implicit rationing is the nurse-sensitive factor that seems to be closest to a significant result. This could be an indication that implicit rationing has an effect on how or if nutritional interventions are performed (e.g. administering ONS). A possible explanation to support this assumption is that implicit rationing might lead to reduced resources to assist patients while eating (e.g. feeding or precutting the food) or to teach patients to order food that meets their requirements.

6.3.2 The Effect on Work Satisfaction

There are significant bivariate correlations between attitude towards nutritional interventions, implicit rationing, uncertain information flow, specific and unspecific time pressure and social stressors with work satisfaction, which indicates that there are relationships between work stressors and the satisfaction with work. Because bivariate correlation analysis cannot lead to an assumption on how the factors are connected (which one is the depending and independent variable) these results constitute only a basis for further assumptions and investigations.

Considering the results from the regression analysis where work satisfaction represents the outcome, a more specific picture can be drawn. According to the findings there are nurse-sensitive factors that seem to have a negative impact on work satisfaction. Work stressors that have a negative influence on work satisfaction were found in the field of specific and unspecific time pressure and occupancy. Occupancy can cause time pressure what seems to be a logical connection because overoccupancy can lead to an imbalanced nurse-patient ratio and *ergo* to time pressure (Schubert, 2008). Also if patients are admitted by the wrong medical specialty it can result in increased stress, which is a consequence of overwhelming demands (Büssing, Glaser, & Höge, 2002). If nurses need to focus more intensely on the patients they are not especially trained to treat they are forced to ration their time to be with other patients. This act of rationing nursing care has a negative impact on work satisfaction which is consistent with the preexisting evidence indicating that there is a evident relationship between low nurse staffing and work dissatisfaction (Schubert, 2008). The fact that important interventions need to be rationed in order to be able to manage a workday can therefore lead to less satisfied employees.

The results of multiple regression analysis, suggest a new model of how to explain the influence of work stressors on work satisfaction. With the combination of social stressors and specific time pressure, the occurrence of impaired work satisfaction can be explained more accurately. Because

this model can only explain about 30% of the variance of work satisfaction, other nurse-sensitive factors need to be investigated. Obviously the combination of social and processual-oriented factors causing stress is powerful and need to be prevented in order to preserve work satisfaction.

6.3.3 The Effect on Exhaustion

There are significant bivariate correlations between social stressors, specific and unspecific time pressure with exhaustion. The same work stressor-related variables became evident in a regression model connected to the outcome of exhaustion. Therefore exhaustion seems to be influenced by these nurse-sensitive factors. Similar to work satisfaction the variables concerned with time pressure seem to be influence the exhaustion of nurses. Both specific and unspecific time pressure lead to more exhausted nursing staff. But not only time pressure is followed by this consequence. Also social stressors and therefore social conflict exhausts the staff. Unspecific time pressure and specific time pressure tend to a different direction of impact. Whereas unspecific time pressure can be caused by the workload itself, specific time pressure is due to the cooperation with other people (colleagues, superiors, physicians and patients). Therefore specific time pressure overlaps with social stressors because it has also a social component based on social interactions. The results show that time pressure and impaired cooperation with other people and disciplines exhausts nursing staff. There was no relationship between exhaustion and Implicit rationing, which is surprising. According to the literature higher levels of rationing are related to higher rates of emotional exhaustion (Schubert, 2008).

7 Conclusion

In the concluding part of this work every hypothesis will be discussed and the corresponding research questions will be answered.

> ***H1:*** *The average calorie and protein intake of internal medicine patients with an NRS ≥3 points is significantly lower if the nursing staff experiences* ***time pressure****.*

The results show that there is no significant lower calorie or protein intake of patients cared by nursing staff with more time pressure. This result is encouraging, because it seems that time pressure does not influence the quality of nourishment in malnourished patients. On a less positive note, tendencies in the favor of the hypothesis were obvious.

> ***H2:*** *The average calorie and protein intake of internal medicine patients with an NRS ≥3 points is significantly lower if the nursing staff experiences* ***social conflicts****.*

The results show no dependency between social stressors and the average calorie and protein intake of internal medicine patients with an NRS ≥3 points. Based on these results an assumption that social stress might lead to a declination of nutritional attendance for patients with malnutrition cannot be supported, but tendencies correspond with the hypothesis.

> ***H3:*** *The average calorie and protein intake of internal medicine patients with an NRS ≥3 points is significantly lower the more the nursing staff experiences* ***organizational stressors.***

The results show no dependency between organizational stressors and the average calorie and protein intake of internal medicine patients with an NRS ≥3 points. Based on these results the assumption that organizational stressors can lead to a declination of nutritional attendance for patients with malnutrition needs to be rejected. Only occupancy has a tendency that matches previous assumptions.

> ***H4:*** *The average calorie and protein intake of internal medicine patients with an NRS ≥3 points is significantly lower the more the nursing staff performs* ***implicit rationing*** *of nursing care.*

Although the hypothesis needs to be rejected based on the results of this study, also tendencies are agree with the assumption. Therefore this hypothesis cannot be conclusively rejected or supported with the sample-size of this study. The influence of rationing nursing care and a declination of nutritional attendance for malnourished patients needs to be further investigated.

> ***H5:*** *A negative* ***attitude*** *of the nursing staff towards nutritional therapy is negatively associated with the average calorie and protein intake of internal medicine patients with a NRS of ≥3 points.*

The hypothesis needs to be rejected. No significant results support this assumptions, nor are clear tendencies obvious.

On the other hand an interesting finding was that there are tendencies for a dependency between stressors and attitude. Although this can only be shown with significance in a bloated data set, these tendencies are indicated in all calculations. The assumption that stress factors and attitude are linked in any way needs to be explored and confirmed with a bigger sample-size and a more specific study design and can therefore not be finally answered with the results of the present study.

> ***H6:*** *There is an association between the extent of* ***nurse-sensitive factors*** *and work satisfaction of the nursing staff.*

The factors social stressors, time pressure, occupancy and implicit rationing examined in this study are obviously associated with work satisfaction. Therefore the assumption that high levels of

stressors can lead to dissatisfaction at work can be confirmed. This result supports the importance of awareness that stress management is an essential part of nursing care because dissatisfaction with work can accelerate to declined quality in safety management (Carayon & Gurses, 2008). This study indicates that being socially stressed and rationing of nursing care are the two factors that influence satisfaction with work the strongest. Considering rationing nursing care it seems that nurses who need to ration are less satisfied than nurses who do not need to ration their care to the same extent. This association supports the assumption that rationing care is not something nurses like to do but simply have to, in order to be able to manage their workday. Rationing might cause ambivalence between wanting to take care but not being able to do so with the desired quality and quantity. The causal chain needs to be further explored to understand the influence and impact of it.

> ***H7:*** *There is an association between the extent of* ***nurse-sensitive factors*** *and the exhaustion of the nursing staff.*

The presented research indicates that there is an association between stressors and exhaustion, although exhaustion probably is mainly caused by social stress and time pressure. Organizational stressors do not seem to have the same impact on exhaustion. The reason for this result stays unclear because the hypothesis is based on the assumption that organizational stressors can also cause time pressure and insecurity and hence assumedly will result in an exhausted nursing staff. A bigger sample might lead to a different outcome, because it contradicts the expectation and logical derivation of this study. The study confirms the hypothesis that stress and exhaustion are connected. A possible explanation for this is that a heavy workload can wear out physically as much as psychologically and therefore leads to the feeling of exhaustion (Carayon & Gurses, 2008). In case of this study it is implied that time pressure and social conflict are more exhausting than stress based on work process.

Considering the research question ***"What is the impact of work-related stressors of the internist nursing staff on the ACCR of patients with a Nutritional Risk Score of ≥3 points?"*** no final conclusion can be made. Although the results did not uncover significant relationships, a bigger sample might show a different picture. As long as the results are inconclusive due to a small sample size the question is still unanswered and an interesting approach when investigating the implications of work stressors, implicit rationing of nursing care and the influence of attitude concerning the topic of medical intervention.

The second research question ***"Do hospital wards at KSA differ in the extent of nurse-sensitive factors and the adequacy of nutritional coverage (calorie and protein) of internal medicine patients?"*** revealed that hospital wards do differ, although they belong to the same clinic. On which

ground this differences emerge is yet not finally answered but there are interesting assumptions (e.g. not every hospital ward has the same resources which influences daily work). Following up with these assumptions might lead to further insight and possibilities to improve the process by learning from the knowledge already existing in the clinic.

8 Limitations and Prospects

One major limitation of this study is the number of participants in the nurse's sample. It is not possible to make a final conclusion based on these premises. The presented data need to be understood as an indication that needs to be explored with a bigger sample, especially concerning the nurse-sensitive factors. The limitation in power can be explained by the limited possibilities at just one hospital in just one clinic (internal medicine). This study is rather a pre-study in context of the EFFORT-trial that needs to be repeated as soon as more hospitals are included in the EFFORT-trial. At the time of the examination no further hospitals had enough patient data to include them in this study.

Because it was not possible to link nurses to individual patients it was necessary to construct new data sets. In order to investigate if nurse-sensitive factors impact patient's nutrition these data needed to be merged. To try every possible angle and to avoid a very small sample-size, data was bloated. The bloated data lead to more significant results compared to the smaller data sets. This procedure is not the best practice and leads to results that need further investigations. There is no final conclusion possible based on these results and should therefore be treated as a pilot study. Because of this rather complicated way to connect the nurses and patients data the analysis done with an ANOVA is not necessarily the most fitting. Unfortunately it was not possible to conduct an analysis of covariance (ANCOVA) because none of the covariance's (BMI, NRS and Age) met the necessary assumptions. BMI and NRS did not exhibit a linear regression with the other conditions (ACCR and ACPR) and Age violated the assumption of homogeneity of variance (Field, 2009). According to Field (2009) there is no alternative adequate non-parametric testing to an ANCOVA. He recommends a multi-level analysis, which might have been the more proper way to examine this data. Due to limited power and a targeted number of 20 groups at a higher-level variable, this statistical analysis was not conducted. With a bigger sample-size, a generalized estimated equation (GEE) in SPSS would be the more robust technique, also because nurses working for the same clinic cannot be assumed to be fully independent which violates a basic assumption and indicates a lack of homoscedasticity.

Also regarding covariance, not all targeted covariant factors were possible to investigate, because not all data was available to the author (e.g. sex, underlying condition and comorbidities of patients). In a further investigation these variables need to be controlled.

Regarding the regression analysis, it was assumed that there is a linear regression between work stressors with ACCR and ACPR. Due to visual assessment the picture is rather unclear due to a very small sample-size, but in further investigations also a non-linear regression should be tested. It seems possible that stressors first lead to better implementation of nutritional intervention, but if stressors start to be overwhelming, attention for nutritional support decreases.

A further methodological weakness is the unsatisfying reliability of the SANN-G scale. The scale is not the best fit for the presented situation because the validation of the scale was done with geriatric patients. Although internal medicine treats a fair amount of elderly people, the setting is not the same as in a nursing home. In a further study the items of the SANN-G scale should be adapted to a more clinical setting and also validated before conclusions can be made. The items taken from SANN-G scale were translated from the English to the German language because there was no preexisting translation. Due to the limited time to construct a survey and the limitation in sample-size a validation of the translated version was not possible. For further investigations the scale should be professionally translated and validated in its translated version.

The theoretical approach in this study is rather explorative and is not based on previous assumptions extracted from a literary research. Some assumptions are based on the authors experience working as a dietician and the prescriptions of the supervising physician and chief investigator. It can be discussed if it would have made sense to do a qualitative research such as a qualitative interview or observations beforehand the quantitative approach with a survey was executed. Because the assumptions were rather vaguely theory-based an explorative and therefore qualitative procedure could have been very conclusive in this context.

For future research a further investigation of the relationship between attitude and the impact on medical intervention such as nutritional therapy seems to be a promising an interesting approach. Especially in the context of stress, nurses' environment and new phenomenon's in the field of nursing care caused by the stronger economic pressure lying on hospital management. Could a positive appraisal of work and the tasks associated with it make a difference in work satisfaction, exhaustion and even implicit rationing? Although this study did not reveal a direct relation between stressors at work and the restraint of dietetic interventions resulting in an insufficient supply, it still offers a new assumption that attitude might play a key role in this interaction.

In case of further research in this field it seems advisable to initially explore the field by doing qualitative research such as interviewing experts (=nurses). Based on these information's a more fitting and adjusted survey could be conducted. It is necessary to recruit a larger sample of nurses. Also the questioning of other hospital staff such as physicians and interdisciplinary professions would give important insights. The goal should be to gain an overview of new hindrances and also promotive factors in the field of patients' care and patients' safety.

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10 Appendix

Appendix A: Survey

Appendix B: Power Analysis

Appendix C: Normal Distribution

Appendix D: Homogeneity of Variance and ANOVA

Appendix E: Descriptive Statistic

Appendix F: Scatter Plots

Appendix G: Regression Analysis

Appendix H: Multiple Regression Analysis

Appendix J: Homoscedasticity

Appendix A: Multiple Regression Analysis

Herzlichen Willkommen zur Befragung
Sie nehmen an einer Befragung teil, welche zum Ziel hat die bedingungsbezogenen Faktoren in der Arbeitsumgebung im pflegerischen Alltag zu beleuchten.
Die Befragung wird im Rahmen einer Bachelorarbeit an der Fachhochschule Nordwestschweiz im Bereich Arbeits- und Organisationspsychologie
in Zusammenarbeit mit der Bereichsleitung Medizin AD und PD, Kantonsspital Aarau durchgeführt.
Die Befragung wird insgesamt ca. 20-25 Minuten dauern.

Alle erhobenen Daten werden streng vertraulich behandelt und nicht an Dritte weitergegeben.

Bitte lesen Sie jede Frage und auch jede Antwortoption gut durch, denn die Antwortoptionen variieren je nach Frageblock. Füllen Sie wenn möglich jede Frage aus.

Fürs Mitmachen möchte ich mich mit einem 15 CHF Gutschein für Ihren Spital-Badge bedanken. Bitte informieren Sie nach Beendigung des Fragebogens die Abteilungsleitung, damit wir Ihnen den Gutschein zukommen lassen können.
Deadline für das Mitmachen bei der Befragung: 26.01.2015

Herzlichen Dank und freundliche Grüsse
Caroline Weibel
caroline.weibel@students.fhnw.ch

Wie oft ist es in den letzten 7 Arbeitstagen vorgekommen dass....

	nie	selten	manchmal	oft	Massnahme war nicht erforderlich
Sie bei Patienten eine notwendige Ganzwäsche nicht durchführen konnten?	○	○	○	○	○
Sie bei Patienten eine notwendige Teilwäsche nicht durchführen konnten?	○	○	○	○	○
Sie bei Patienten eine notwendige Hautpflege nicht durchführen konnten?	○	○	○	○	○
Sie bei Patienten eine notwendige Mundpflege nicht durchführen konnten?	○	○	○	○	○
Sie bei Patienten eine notwendige Zahnpflege nicht durchführen konnten?	○	○	○	○	○
Sie Patienten, die nicht selbständig essen konnten, nicht angemessen bei der Nahrungsaufnahme unterstützen konnten?	○	○	○	○	○
Sie in ihrer Mobilität oder Beweglichkeit eingeschränkte oder immobile Patienten nicht so oft wie notwendig mobilisieren konnten?	○	○	○	○	○
Sie in ihrer Mobilität oder Beweglichkeit eingeschränkte oder immobile Patienten nicht so oft wie notwendig umlagern konnten?	○	○	○	○	○

Wie oft ist es in den letzten 7 Arbeitstagen vorgekommen dass....

	nie	selten	manchmal	oft	Massnahme war nicht erforderlich
Sie bei Patienten eine mit Urin, Stuhl oder Erbrochenem stark verschmutzte Bettwäsche nicht in einem angemessenen Zeitraum wechseln konnten?	○	○	○	○	○
Sie Patienten nicht die notwendige emotionale und psychosoziale Unterstützung und Begleitung anbieten konnten, z. B. im Umgang mit Unsicherheit und Angst, dem Gefühl von Abhängigkeit?	○	○	○	○	○
Sie mit Patienten oder Angehörigen ein notwendiges Gespräch nicht führen konnten?	○	○	○	○	○
Sie Patienten nicht ausreichend über bevorstehende Untersuchungen oder geplante Therapien informieren konnten?	○	○	○	○	○
Sie bei Patienten kein Toilettentraining / Kontinenztraining durchführen konnten und ihnen deswegen Inkontinenzeinlagen geben mussten?	○	○	○	○	○
Sie bei Patienten kein Toilettentraining / Kontinenztraining durchführen konnten und ihnen deswegen einen Dauerkatheter einlegen mussten?	○	○	○	○	○
Sie bei Patienten keine aktivierende und / oder rehabilitierende Pflege durchführen konnten?	○	○	○	○	○
Sie Patienten oder Angehörige nicht anleiten oder schulen konnten, z. B. Insulin - Injektionen, Verhalten oder Umgang mit krankheitsspezifischen Symptomen (Hypoglykämie, Atemnot etc.)?	○	○	○	○	○

Wie oft ist es in den letzten 7 Arbeitstagen vorgekommen dass....

	nie	selten	manchmal	oft	Massnahme war nicht erforderlich
Sie Patienten und / oder Angehörige von pflegerischer Seite her nicht genügend auf den Spitalaustritt vorbereiten konnten?	○	○	○	○	○
Sie verwirrte Patienten nicht genügend beaufsichtigen konnten und ihnen deswegen Beruhigungsmittel verabreichen mussten?	○	○	○	○	○
Sie bei Patienten mit akuten oder unvorhergesehenen Veränderungen des Gesundheitszustands, die notwendige Massnahmen verspätet einleiten konnten, weil der gerufene Arzt mit grosser Verspätung vorbeigekommen ist?	○	○	○	○	○
Sie ein verordnetes Medikament und / oder Infusion nicht zum vorgegebenen Zeitpunkt verabreichen konnten?	○	○	○	○	○
Sie bei Patienten einen notwendigen Verbandswechsel nicht durchführen konnten?	○	○	○	○	○
Sie Patienten nicht so häufig überwachen konnten, wie es ärztlich verordnet war?	○	○	○	○	○
Sie Patienten nicht so häufig überwachen konnten, wie es aus ihrer Sicht notwendig gewesen wäre?	○	○	○	○	○
Sie verwirrte Patienten nicht genügend beaufsichtigen konnten und sie deswegen fixieren mussten?	○	○	○	○	○

Wie oft ist es in den letzten 7 Arbeitstagen vorgekommen dass....

	nie	selten	manchmal	oft	Massnahme war nicht erforderlich
Sie einen Patienten nicht für eine Untersuchung oder Therapie vorbereiten konnten?	○	○	○	○	○
Sie Patienten, die geläutet haben, länger als 5 Minuten haben warten lassen müssen?	○	○	○	○	○
Sie keine angemessene Händehygiene durchführen konnten?	○	○	○	○	○
Sie notwendige Desinfektionsmassnahmen nicht einhalten konnten?	○	○	○	○	○
Sie bei Schichtantritt keine Zeit hatten, sich anhand der Pflegedokumentation über die Patientensituation ausreichend zu informieren?	○	○	○	○	○
Sie bei neu eingetretenen Patienten keine pflegerische Bedarfsabklärung durchführen konnten?	○	○	○	○	○
Sie bei Patienten eine Pflegeplanung nicht erstellen konnten?	○	○	○	○	○
Sie bei Patienten die durchgeführte Pflege nicht genügend dokumentieren und evaluieren konnten?	○	○	○	○	○

Die Arbeitsbelastung der letzten 7 Tage war ... wie/als Sie es in den letzten 3 Monaten normalerweise erlebt haben.

○ höher

○ gleich

○ tiefer

Die folgenden Aussagen sind im Bezug auf die Umstände der letzten drei Monate zu beantworten.

Auf dieser Station ist man immer wieder mit Problemen bei der Bettenbelegung konfrontiert (Überbelegung, Fehlbelegung).

- ○ Nein gar nicht
- ○ Eher nein
- ○ Teils teils
- ○ Eher ja
- ○ Ja genau

Auf dieser Station ist man immer wieder mit unsicheren Informationen konfrontiert (z.B. Gerüchte über personelle oder organisatorische Veränderungen oder unklareInformationen zu Patientenprozessen).

- ○ Nein gar nicht
- ○ Eher nein
- ○ Teils teils
- ○ Eher ja
- ○ Ja genau

Auf dieser Station gibt es wegen Personalwechsel und Abwesenheiten immer wieder Probleme (z.B. Zeitdruck, unklare Arbeitseinteilung)

- ○ Nein gar nicht
- ○ Eher nein
- ○ Teils teils
- ○ Eher ja
- ○ Ja genau

Die folgenden Aussagen sind im Bezug auf die Umstände der letzten drei Monate zu beantworten.

Auf dieser Station ist die Zusammenarbeit mit Kollegen/-innen immer wieder belastet (z.B. durch Streit, schlechte Zusammenarbeit, unklare Prozessabläufe, nicht Einhalten von Abgmachungen).

- ○ Nein gar nicht
- ○ Eher nein
- ○ Teils teils
- ○ Eher ja
- ○ Ja genau

Auf dieser Station ist die Zusammenarbeit mit Vorgesetzten immer wieder belastet (z.B. durch Streit, schlechte Zusammenarbeit, unklare Prozessabläufe, nicht Einhalten von Abgmachungen).

- ○ Nein gar nicht
- ○ Eher nein
- ○ Teils teils
- ○ Eher ja
- ○ Ja genau

Auf dieser Station ist die Zusammenarbeit mit Patienten immer wieder belastet (z.B. durch Streit, schlechte Zusammenarbeit, unklare Prozessabläufe, nicht Einhalten von Abgmachungen).

- ○ Nein gar nicht
- ○ Eher nein
- ○ Teils teils
- ○ Eher ja
- ○ Ja genau

Die folgenden Aussagen sind im Bezug auf die Umstände der letzten drei Monate zu beantworten.

Auf dieser Station ist die Zusammenarbeit mit Ärzten immer wieder belastet (z.B. durch Streit, schlechte Zusammenarbeit, unklare Prozessabläufe, nicht Einhalten von Abgmachungen).

- ○ Nein gar nicht
- ○ Eher nein
- ○ Teils teils
- ○ Eher ja
- ○ Ja genau

Man muss sich häufig sehr beeilen und wird trotzdem nicht mit seiner Arbeit fertig.

- ○ Nein gar nicht
- ○ Eher nein
- ○ Teils teils
- ○ Eher ja
- ○ Ja genau

Man hat bei seiner Arbeit immer wieder zuviel auf einmal zu tun.

- ○ Nein gar nicht
- ○ Eher nein
- ○ Teils teils
- ○ Eher ja
- ○ Ja genau

Die folgenden Aussagen sind im Bezug auf die Umstände der letzten drei Monate zu beantworten.

Man hat bei seiner Arbeit auf dieser Station wegen Terminvorgaben von Vorgesetzten immer wieder grossen Zeitdruck.

- ○ Nein gar nicht
- ○ Eher nein
- ○ Teils teils
- ○ Eher ja
- ○ Ja genau

Man hat bei seiner Arbeit auf dieser Station wegen Terminvorgaben durch andere Bereiche immer wieder grossen Zeitdruck.

- ○ Nein gar nicht
- ○ Eher nein
- ○ Teils teils
- ○ Eher ja
- ○ Ja genau

Man muss auf dieser Station immer wieder Tätigkeiten unter grossem Zeitdruck verrichten, weil zur Aufgabenerledigung notwendige Personen nur zu bestimmten Zeiten erreichbar sind.

- ○ Nein gar nicht
- ○ Eher nein
- ○ Teils teils
- ○ Eher ja
- ○ Ja genau

Die folgenden Aussagen sind im Bezug auf die Umstände der letzten drei Monate zu beantworten.

Man muss auf dieser Station immer wieder Tätigkeiten unter grossem Zeitdruck verrichten, weil Geräte/Hilfsmittel nur zu bestimmten Zeiten verfügbar sind.

- ○ Nein gar nicht
- ○ Eher nein
- ○ Teils teils
- ○ Eher ja
- ○ Ja genau

Man muss auf dieser Station immer wieder Tätigkeiten unter grossem Zeitdruck verrichten, weil Räumlichkeiten nur zu bestimmten Zeiten genutzt werden können.

- ○ Nein gar nicht
- ○ Eher nein
- ○ Teils teils
- ○ Eher ja
- ○ Ja genau

Die folgenden Aussagen sind im Bezug auf die Umstände der letzten drei Monate zu beantworten.

Wenn Sie Ihre Arbeitssituation insgesamt betrachten, wie zufrieden sind Sie mit...

	Sehr zufrieden	Zufrieden	Unzufrieden	Sehr unzufrieden
... Ihren Berufsperspektiven?	○	○	○	○
... den Leuten, mit denen Sie arbeiten?	○	○	○	○
... den körperlichen Arbeitsbedingungen?	○	○	○	○
... der Art und Weise, wie Ihre Abteilung geführt wird?	○	○	○	○
... der Art und Weise, wie Ihre Fähigkeiten genutzt werden?	○	○	○	○
... den Herausforderungen und Fertigkeiten, die Ihre Arbeit beinhaltet?	○	○	○	○
... Ihrer Arbeit insgesamt, unter Berücksichtigung aller Umstände?	○	○	○	○

Wie sehr treffen die folgen Aussagen auf Sie und Ihre Arbeitssituation der letzten 3 Monaten zu?

	völlig unzutreffend	eher unzutreffend	eher zutreffend	völlig zutreffend
Es gibt Tage, an denen ich mich schon müde fühle, bevor ich zur Arbeit gehe.	○	○	○	○
Nach der Arbeit brauche ich jetzt oft längere Erholungszeiten als früher, um wieder fit zu werden.	○	○	○	○
Die Belastung durch meine Arbeit ist ganz gut zu ertragen.	○	○	○	○
Ich habe bei der Arbeit immer häufiger das Gefühl, emotional ausgelaugt zu sein.	○	○	○	○
Nach der Arbeit bin ich in der Regel noch ganz fit für meine Freizeitaktivitäten.	○	○	○	○
Nach der Arbeit fühle ich mich in der Regel schlapp und angespannt.	○	○	○	○
In der Regel kann ich meine Arbeitsmenge gut schaffen.	○	○	○	○
Während meiner Arbeit fühle ich mich total fit.	○	○	○	○

Bitte nehmen Sie zu den folgenden Aussagen Stellung im Rahmen Ihrer persönlichen Einstellung und ohne Bezug auf einen konkreten Fall.

	Stimme gar nicht zu	Stimme nicht zu	Fraglich/ Unklar	Stimme insgesamt zu	Stimme vollkommen zu
Es ist wichtig den Energiebedarf der Patienten/ Patientinnen, welche wenig essen, zu berechnen.	○	○	○	○	○
Wenn Patienten/Patientinnen mit Wunden adäquat medizinisch versorgt werden, hat die Ernährung keine Relevanz bei der Wundheilung.	○	○	○	○	○
Wenn Patienten/Patientinnen mit einer Infektion adäquat medikamentös behandelt werden, hat der Ernährungszustand keinen Einfluss auf die Genesung.	○	○	○	○	○
Wenn die Energiezufuhr mangelernährter Patienten/Patientinnen erhöht wird, steigt die Chance einer besseren Mobilität.	○	○	○	○	○
Pflegepersonal mit grossem Erfahrungsschatz wissen immer was die Patienten/Patientinnen essen sollten.	○	○	○	○	○
Trinknahrungen sind ein guter Ersatz für eine normale Ernährung.	○	○	○	○	○
Übergewichtige Patienten sollte immer eine niederkalorische Ernährung erhalten.	○	○	○	○	○
Mangelernährung ist kein häufiges Problem bei betagten Patienten.	○	○	○	○	○

Bitte nehmen Sie zu den folgenden Aussagen Stellung im Rahmen Ihrer persönlichen Einstellung und ohne Bezug auf einen konkreten Fall.

	Stimme gar nicht zu	Stimme nicht zu	Fraglich/ Unklar	Stimme insgesamt zu	Stimme vollkommen zu
Es ist nicht notwendig, den Patienten für die Nahrungsaufnahme adäquat zu lagern/ mobilisieren.	○	○	○	○	○
Es ist wichtig, dass das Essen für alle Patienten/ Patientinnen in gleich grossen Portionen angerichtet wird.	○	○	○	○	○
Betagte Patienten/Patientinnen (70 Jahre oder älter) haben einen niedrigeren Bedarf an Nährstoffen als jüngere.	○	○	○	○	○
Eine warme Mahlzeit pro Tag reicht für Senioren (70 Jahre oder älter) aus.	○	○	○	○	○
Patienten/Patientinnen mit Schluckbeschwerden sollte nicht ermutigt werden, selbstständig zu essen.	○	○	○	○	○
Patienten/Patientinnen werden nicht gerne über ihre früheren Essgewohnheiten befragt.	○	○	○	○	○

Bitte nehmen Sie zu den folgenden Aussagen Stellung im Rahmen Ihrer persönlichen Einstellung und ohne Bezug auf einen konkreten Fall.

	Stimme gar nicht zu	Stimme nicht zu	Fraglich/ Unklar	Stimme insgesamt zu	Stimme vollkommen zu
Es hat keinen Zweck das Körpergewicht aller Patienten/Patientinnen zu erheben.	○	○	○	○	○
Es profitieren nur einige Patienten/Patientinnen von einer Beurteilung des Ernährungsstatuses.	○	○	○	○	○
Es benötigt kein Vorwissen oder Erfahrung zur Unterstützung beim Essen.	○	○	○	○	○
Es bringt nichts, Patienten/Patientinnen mit Schwierigkeiten beim Essen, bei der Nahrungszufuhr alleine zu lassen.	○	○	○	○	○
Es ist unmöglich, dass Patienten ausserhalb der gängigen Essenszeiten ihre Mahlzeiten einnehmen können.	○	○	○	○	○
Mahlzeiten müssen nicht individuell angepasst werden.	○	○	○	○	○

Ich bin...

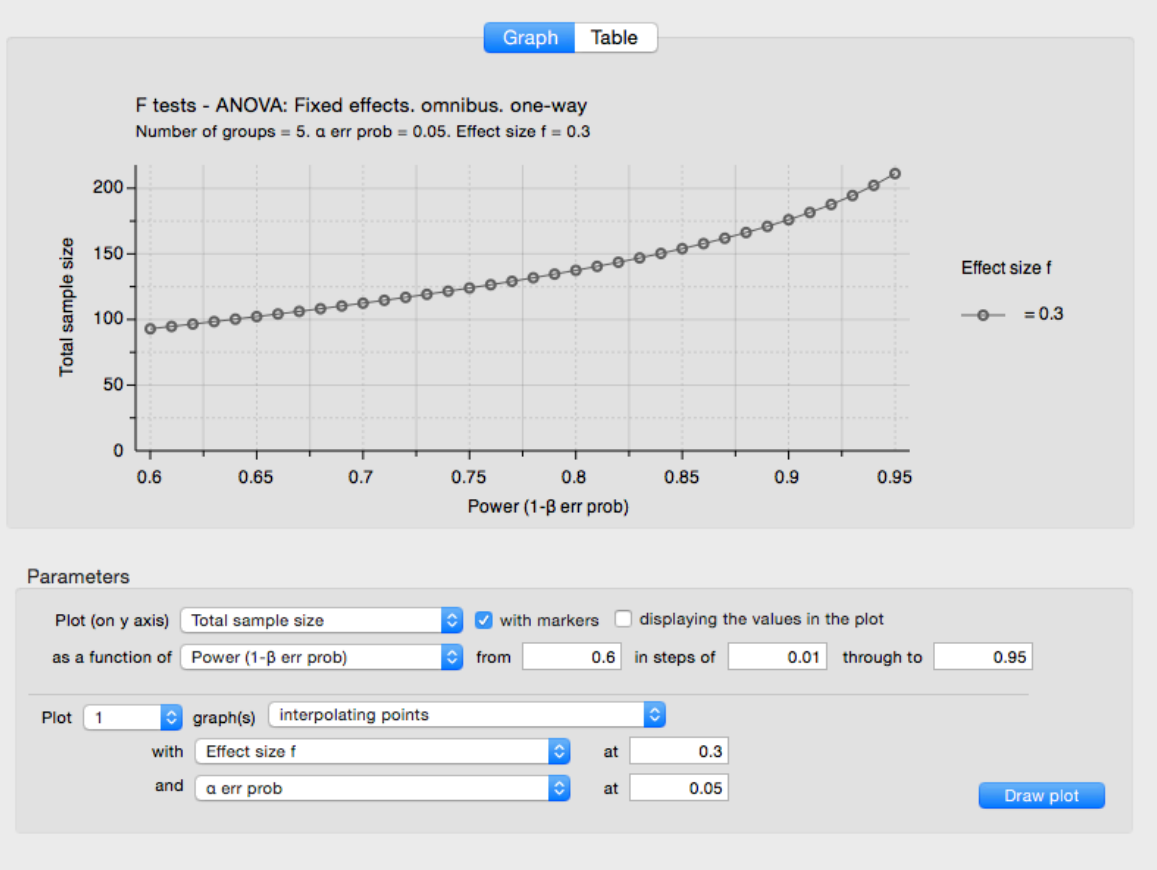
- ○ männlich
- ○ weiblich

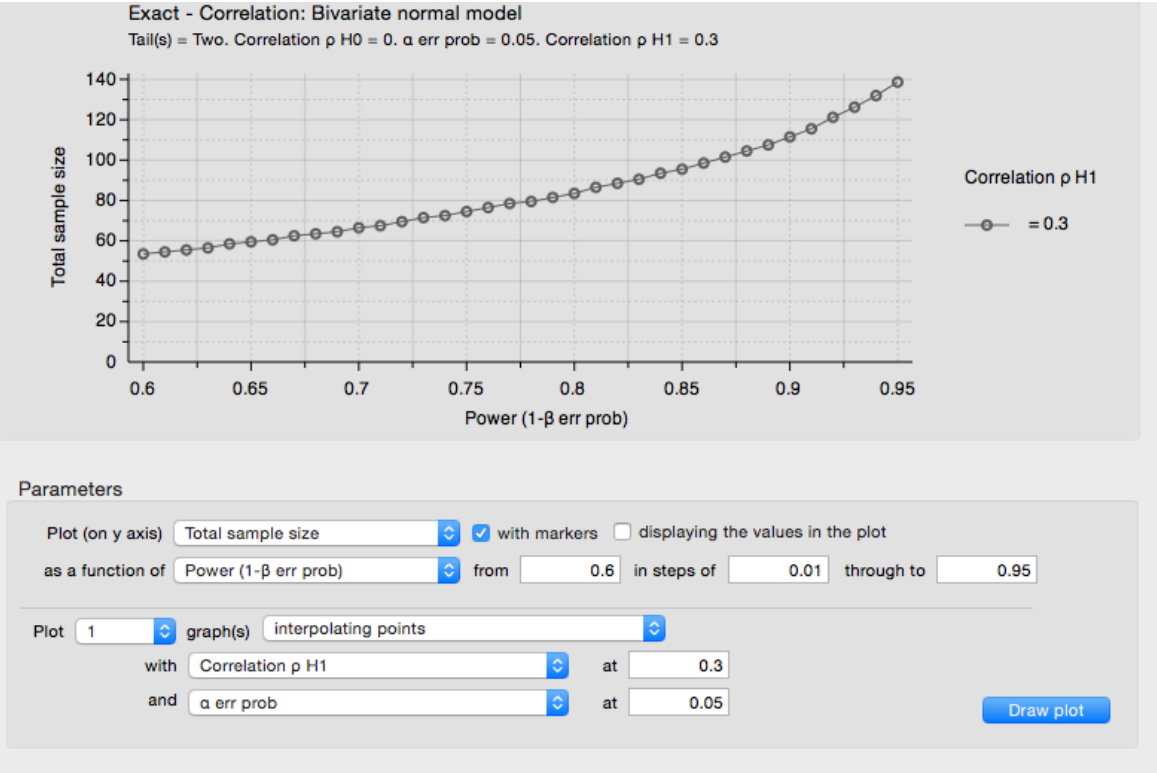
Herzlichen Dank für die Bearbeitung des Fragebogens!
Nun sind Sie am Ende der Befragung angekommen. Ich danke Ihnen bestens für die Teilnahme!
Gerne können Sie die Abteilungsleitung darüber informieren, den Fragebogen ausgefüllt zu haben, damit wir Ihnen so die Belohnung zukommen lassen können.

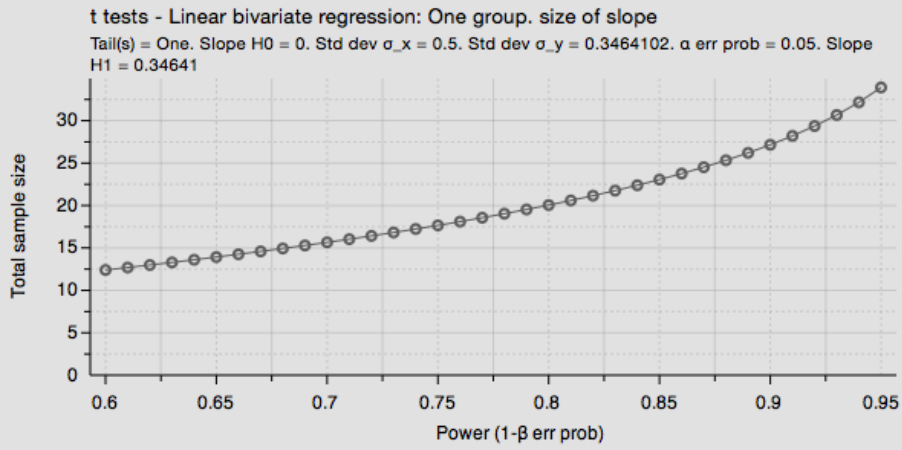
Freundliche Grüsse
Caroline Weibel
Fachhochschule Nordwestschweiz
Hochschule für Angewandte Psychologie, 6. Semester
Bei Rückfragen und Kommentare können Sie sich gerne an mich wenden.
caroline.weibel@students.fhnw.ch

Vielen Dank für die Teilnahme!

Appendix B: Power Analysis







Parameters

Plot (on y axis) Total sample size ☑ with markers ☐ displaying the values in the plot

as a function of Power (1-β err prob) from 0.6 in steps of 0.01 through to 0.95

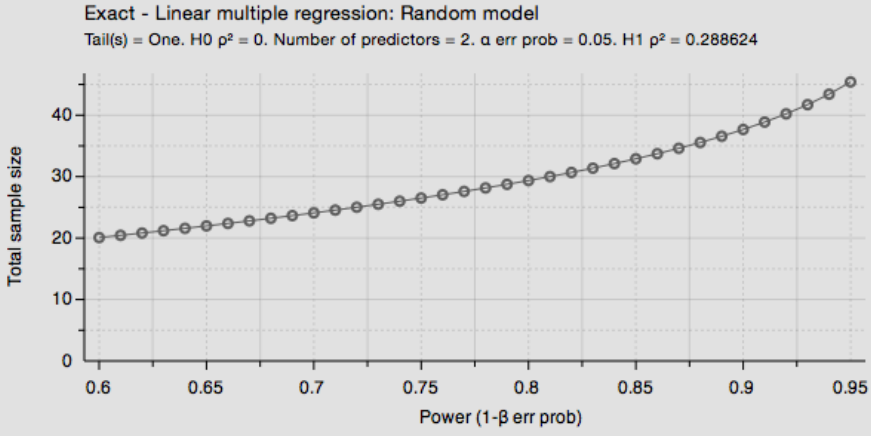
Plot 1 graph(s) interpolating points

with Slope H1 at 0.3464103

and α err prob at 0.05

Draw plot

Graph | Table



Parameters

Plot (on y axis) Total sample size ☑ with markers ☐ displaying the values in the plot

as a function of Power (1-β err prob) from 0.6 in steps of 0.01 through to 0.95

Plot 1 graph(s) interpolating points

with H1 ρ² at 0.288624

and α err prob at 0.05

Draw plot

Appendix C: Normal Distribution

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Ernährungseinstellung	,095	38	,200*	,964	38	,257
Rationing	,092	38	,200*	,967	38	,317
Org.Stressoren	,169	38	,008	,947	38	,072
Soz.Stressoren	,153	38	,026	,966	38	,285
Aufg.Stressoren	,088	38	,200*	,983	38	,824
Pflegeverstaendnis	,170	38	,007	,906	38	,004
Zufriedenheit	,160	38	,016	,944	38	,058
Erschöpfung	,145	38	,041	,952	38	,104

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

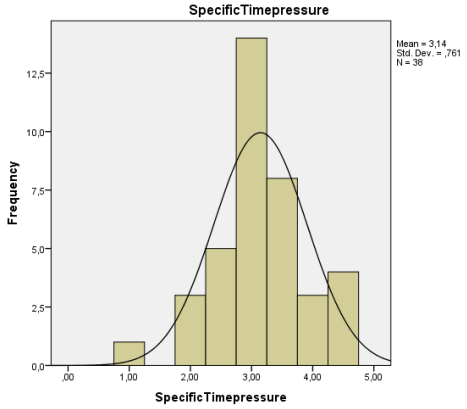
Tests of Normality

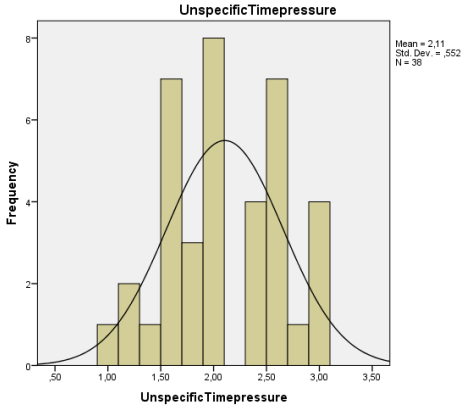
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Alter	,167	95	,000	,833	95	,000
Mean Proz_Energiebedarf	,060	95	,200*	,980	95	,147
Mean Proz_Proteinbedarf	,080	95	,165	,969	95	,023
Mean Energiebedarf	,049	95	,200*	,981	95	,188
Mean Proteinbedarf	,069	95	,200*	,985	95	,350
BMI	,115	95	,003	,955	95	,002
NRS	,199	95	,000	,851	95	,000

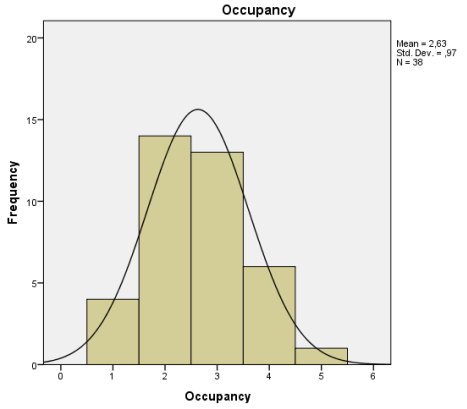
*. This is a lower bound of the true significance.

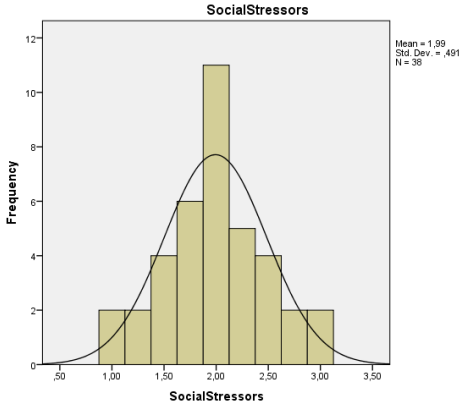
a. Lilliefors Significance Correction

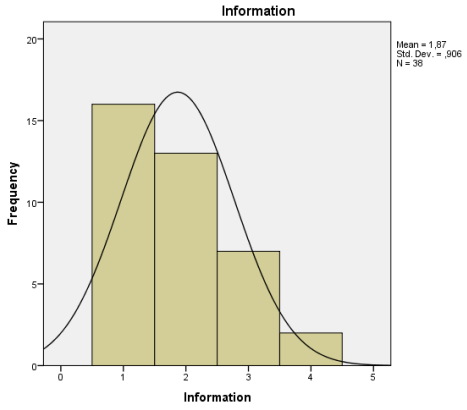
Graphs

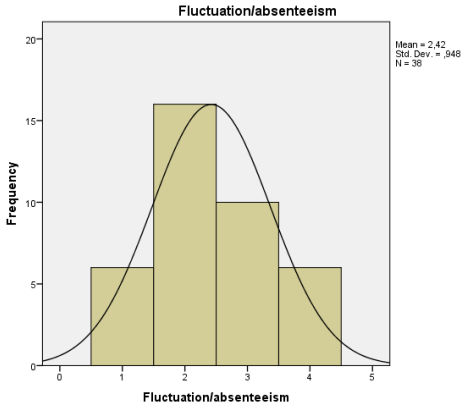

SpecificTimepressure
Mean = 3,14
Std. Dev. = ,761
N = 38
Frequency
SpecificTimepressure

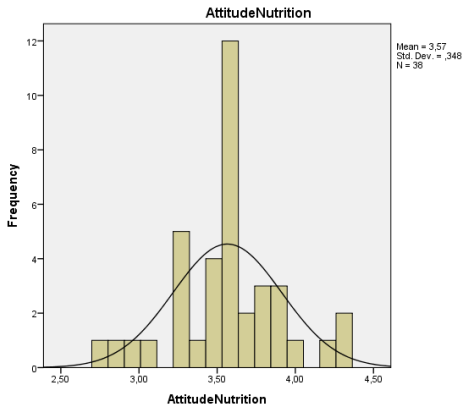

UnspecificTimepressure
Mean = 2,11
Std. Dev. = ,552
N = 38
Frequency
UnspecificTimepressure

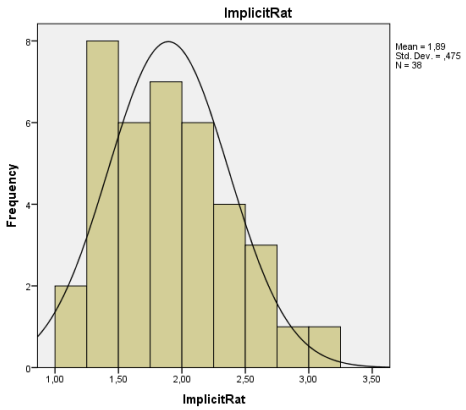

Occupancy
Mean = 2,63
Std. Dev. = ,97
N = 38
Frequency
Occupancy

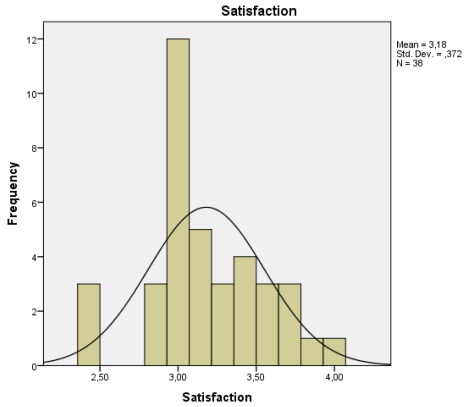

SocialStressors
Mean = 1,99
Std. Dev. = ,491
N = 38
Frequency
SocialStressors

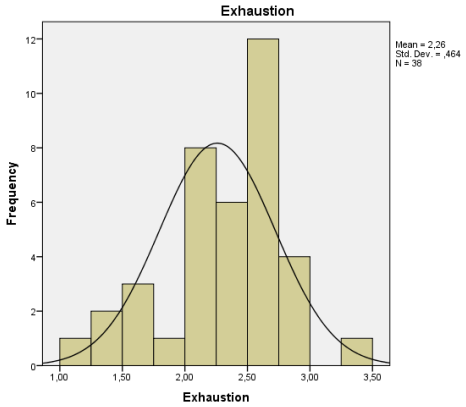

Information
Mean = 1,87
Std. Dev. = ,906
N = 38
Frequency
Information

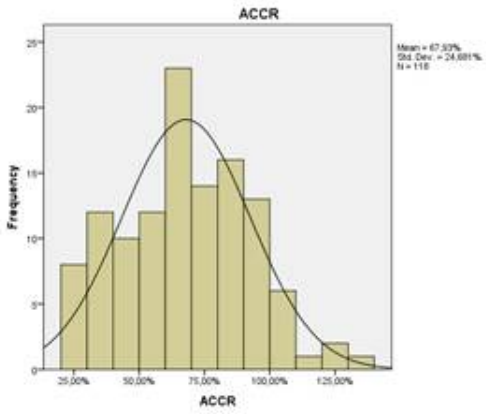

Fluctuation/absenteeism
Mean = 2,42
Std. Dev. = ,948
N = 38
Frequency
Fluctuation/absenteeism

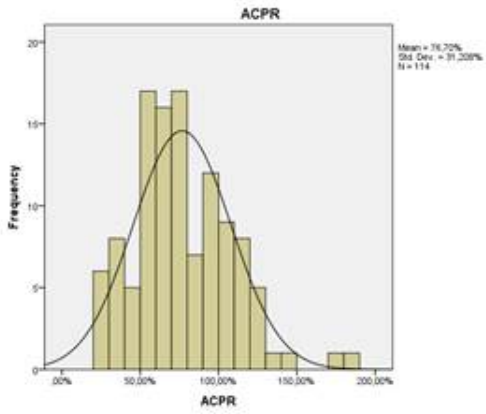

AttitudeNutrition
Mean = 3,57
Std. Dev. = ,348
N = 38
Frequency
AttitudeNutrition

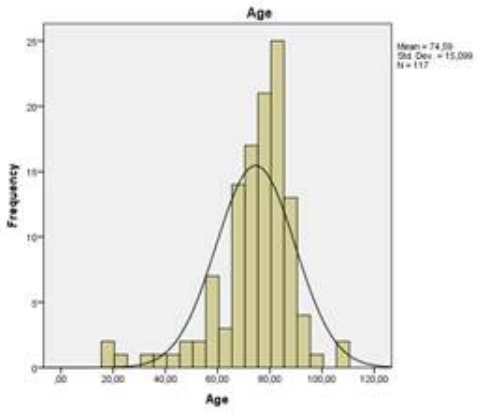

ImplicitRat
Mean = 1,89
Std. Dev. = ,475
N = 38
Frequency
ImplicitRat

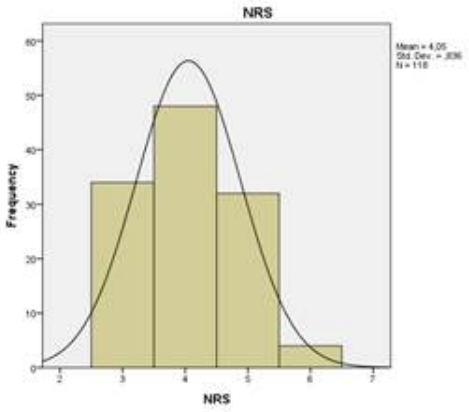

Satisfaction
Mean = 3,18
Std. Dev. = ,372
N = 38
Frequency
Satisfaction

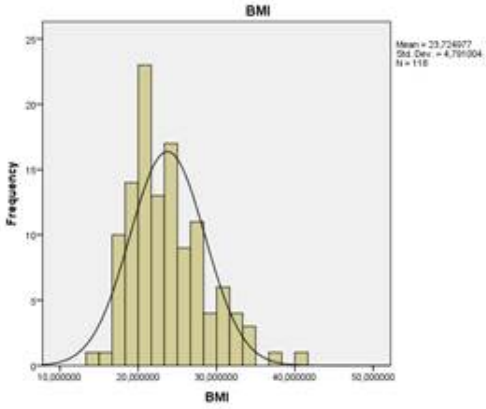

Exhaustion
Mean = 2,26
Std. Dev. = ,464
N = 38
Frequency
Exhaustion


ACCR
Frequency
ACCR


ACPR
Frequency
ACPR


Age
Mean = 74,59
Std. Dev. = 15,099
N = 117
Frequency
Age


NRS
Mean = 4,05
Std. Dev. = ,836
N = 118
Frequency
NRS


BMI
Mean = 23,724977
Std. Dev. = 4,791804
N = 118
Frequency
BMI

Appedix D: Homogeneity of Variances and ANOVA

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
BMI	,594	4	113	,667
NRS	1,198	4	113	,316
Mean Proz_Energiebedarf	2,051	4	113	,092
Mean Proz_Proteinbedarf	2,067	4	109	,090

Age

Levene Statistic	df1	df2	Sig.
3,233	4	112	,015

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
BMI	Between Groups	88,175	4	22,044	,959	,433
	Within Groups	2597,410	113	22,986		
	Total	2685,586	117			
NRS	Between Groups	3,178	4	,794	,958	,434
	Within Groups	93,746	113	,830		
	Total	96,924	117			
Mean Proz_Energiebedarf	Between Groups	5923,298	4	1480,824	2,561	,042
	Within Groups	65346,701	113	578,289		
	Total	71269,998	117			
Mean Proz_Proteinbedarf	Between Groups	7065,569	4	1766,392	1,869	,121
	Within Groups	102991,488	109	944,876		
	Total	110057,057	113			

Appendix E: Descriptive Statistic

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
NRS	118	3	6	4,05	,836	,261	,223	-,769	,442
BMI	118	14,692378	41,095305	23,72497689	4,791004379	,883	,223	,871	,442
ACCR	118	23,69%	139,63%	67,9313%	24,68087%	,219	,223	-,355	,442
Age	117	18,00	109,00	74,5897	15,09919	-1,408	,224	3,394	,444
ACPR	114	20,50%	185,17%	76,7010%	31,20827%	,669	,226	,855	,449
YearOfBirth	118	1905	15191	2051,79	1219,993	10,860	,223	117,963	,442
Valid N (listwise)	113								

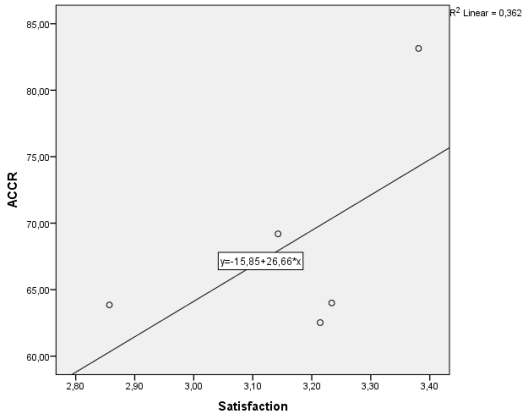
Descriptive Statistics

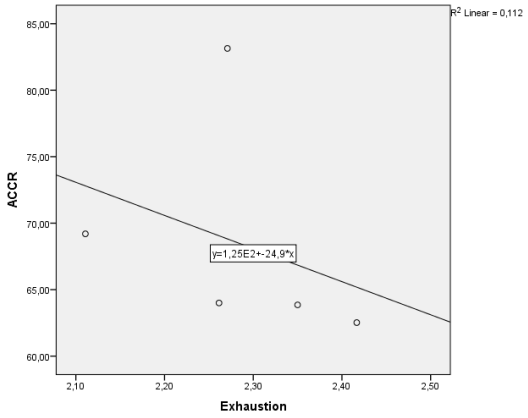
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Information	38	1	4	1,87	,906	,732	,383	-,335	,750
ImplicitRat	38	1,15	3,09	1,8933	,47476	,561	,383	-,148	,750
SocialStressors	38	1,00	3,00	1,9934	,49144	,039	,383	-,093	,750
UnspecificTimepressure	38	1,00	3,00	2,1053	,55163	-,005	,383	-,921	,750
Exhaustion	38	1,00	3,25	2,2594	,46380	-,668	,383	,654	,750
Fluctuation/absenteeism	38	1	4	2,42	,948	,239	,383	-,766	,750
Occupancy	38	1	5	2,63	,970	,263	,383	-,273	,750
SpecificTimepressure	38	1,00	4,50	3,1447	,76147	-,230	,383	,750	,750
Satisfaction	38	2,43	4,00	3,1805	,37235	,063	,383	,039	,750
AttitudeNutrition	38	2,75	4,31	3,5652	,34794	,036	,383	,634	,750
Valid N (listwise)	38								

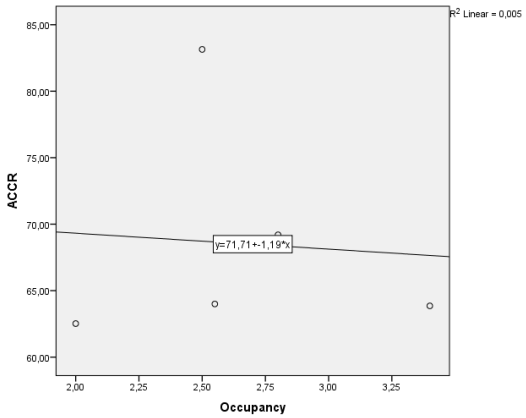
Ward		Satisfaction	Exhaustion	SpecificTimepressure	UnspecificTimepressure	Occupancy	SocialStressors	Information	Fluctuation/absenteeism	AttitudeNutrition	ImplicitRat
A	N Valid	10	10	10	10	10	10	10	10	10	10
	Miss	0	0	0	0	0	0	0	0	0	0
	Mean	3,1429	2,1107	2,7500	2,0800	2,80	2,0500	2,00	2,30	3,5354	1,9644
	Median	3,1429	2,0625	3,0000	2,0000	2,50	2,0000	2,00	2,00	3,5313	2,0000
	SD	,23328	,48084	,58926	,58271	1,033	,38730	1,054	,675	,41190	,42004
	Minimum	2,86	1,38	2,00	1,20	2	1,50	1	1	2,75	1,19
	Max	3,71	2,86	3,50	3,00	5	2,75	4	3	4,25	2,69
B	N Valid	6	6	6	6	6	6	6	6	6	6
	Miss	0	0	0	0	0	0	0	0	0	0
	Mean	3,2143	2,4167	3,5000	2,1000	2,00	1,7083	1,50	1,67	3,5208	2,0704
	Median	3,2143	2,5000	3,2500	2,0000	1,50	1,7500	1,00	2,00	3,5625	1,9517
	SD	,21665	,18819	,83666	,41473	1,265	,43060	,837	,516	,26712	,51425
	Minimum	3,00	2,13	2,50	1,60	1	1,00	1	1	3,06	1,48
	Max	3,57	2,63	4,50	2,60	4	2,25	3	2	3,88	2,83
C	N Valid	5	5	5	5	5	5	5	5	5	5
	Miss	0	0	0	0	0	0	0	0	0	0
	Mean	2,8571	2,3500	3,6000	2,7600	3,40	2,6500	2,80	3,40	3,4000	2,3644
	Median	3,0000	2,5000	3,5000	2,6000	3,00	2,7500	3,00	4,00	3,5625	2,2813
	SD	,24744	,48734	,65192	,21909	,548	,41833	,837	,894	,26737	,50918
	Minimum	2,43	1,63	3,00	2,60	3	2,00	2	2	3,00	1,75
	Max	3,00	2,88	4,50	3,00	4	3,00	4	4	3,63	3,09
D	N Valid	6	6	6	6	6	6	6	6	6	6
	Miss	0	0	0	0	0	0	0	0	0	0
	Mean	3,3810	2,2708	3,3333	2,0667	2,50	2,0000	1,67	3,00	3,6250	1,6685
	Median	3,5000	2,3125	3,2500	2,0000	2,50	2,0000	2,00	3,00	3,5938	1,4497
	SD	,37976	,24260	,60553	,51640	,548	,27386	,516	1,095	,23385	,51921
	Minimum	2,86	1,88	2,50	1,60	2	1,75	1	1	3,31	1,15
	Max	3,86	2,50	4,00	2,60	3	2,25	2	4	4,00	2,33
E	N Valid	11	11	11	11	11	11	11	11	11	11
	Miss	0	0	0	0	0	0	0	0	0	0
	Mean	3,2338	2,2614	3,0000	1,8545	2,55	1,7955	1,64	2,18	3,6591	1,6405
	Median	3,4286	2,3750	3,0000	1,8000	2,00	2,0000	1,00	2,00	3,6250	1,6071
	SD	,51219	,63604	,86603	,54473	,934	,49772	,809	,874	,41960	,26259
	Minimum	2,43	1,00	1,00	1,00	1	1,00	1	1	2,88	1,29
	Max	4,00	3,25	4,50	3,00	4	2,50	3	4	4,31	1,96

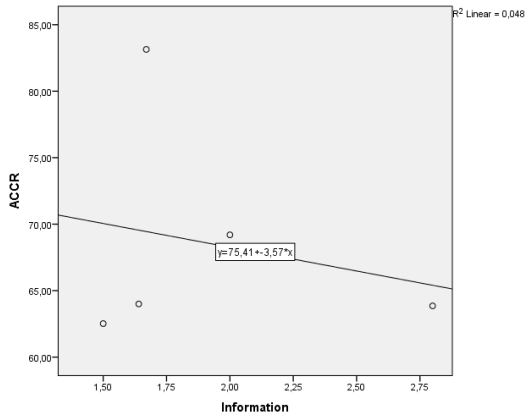
Appendix F: Scatter Plots

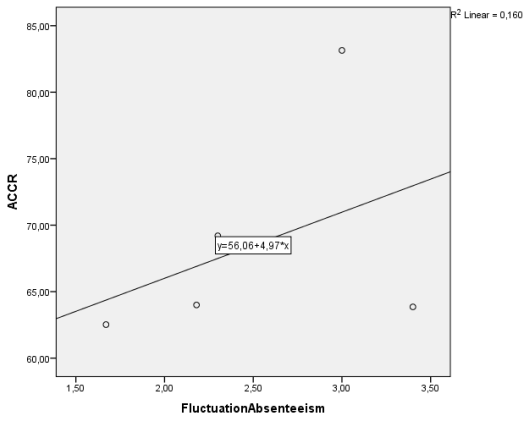
ACCR

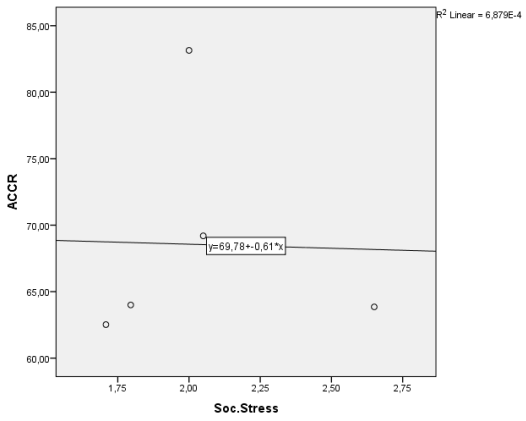


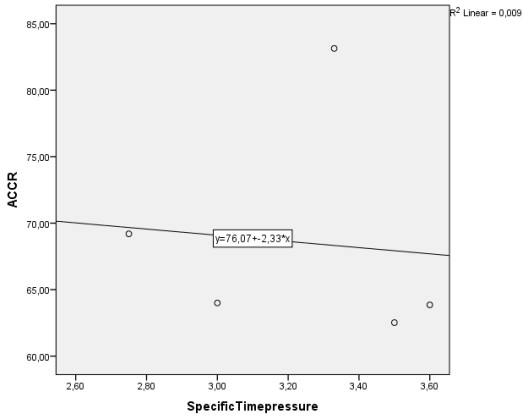


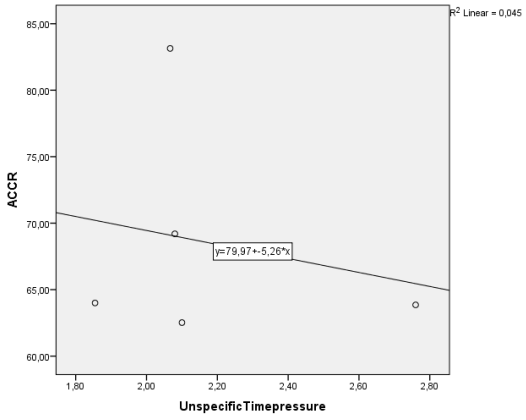


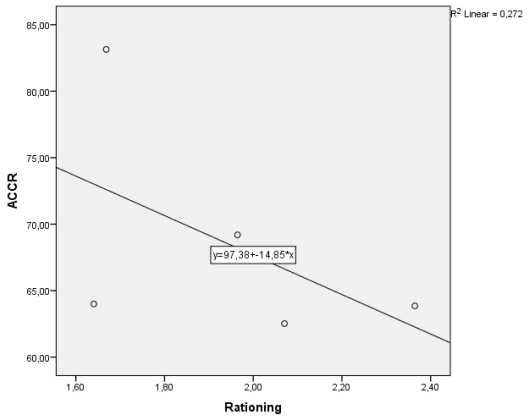


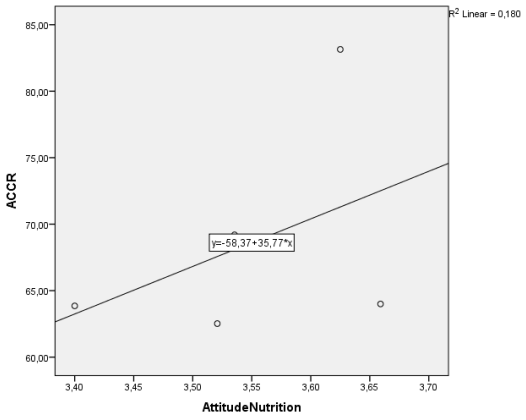

R² Linear = 0,160
ACCR
y=56,06+4,97*x
FluctuationAbsenteeism


R² Linear = 6,879E-4
ACCR
y=69,78+-0,61*x
Soc.Stress

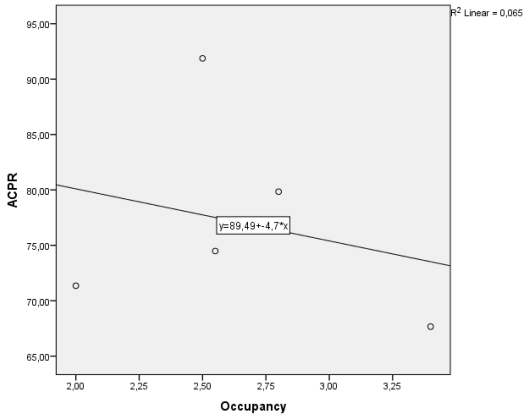

R² Linear = 0,009
ACCR
y=76,07+-2,33*x
SpecificTimepressure

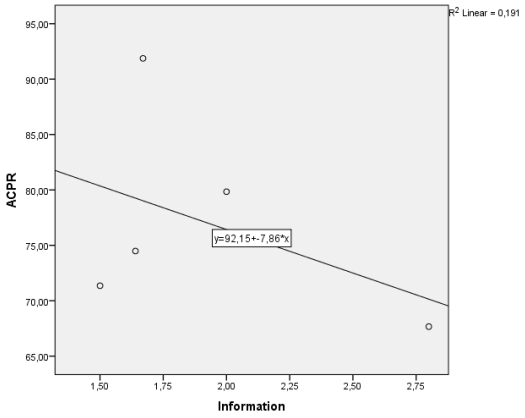

R² Linear = 0,045
ACCR
y=79,97+-5,26*x
UnspecificTimepressure

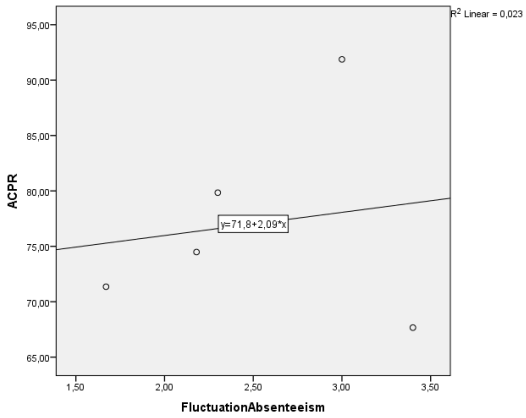

R² Linear = 0,272
ACCR
y=97,38+-14,85*x
Rationing

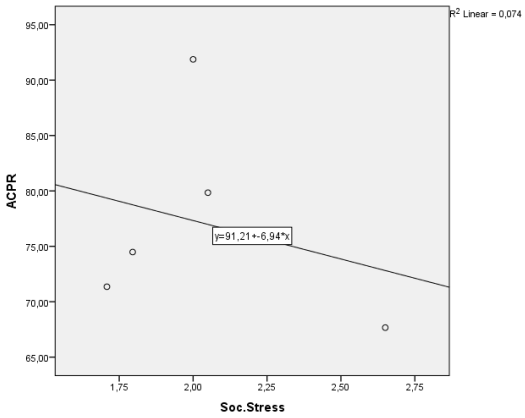

R² Linear = 0,180
ACCR
y=-58,37+35,77*x
AttitudeNutrition

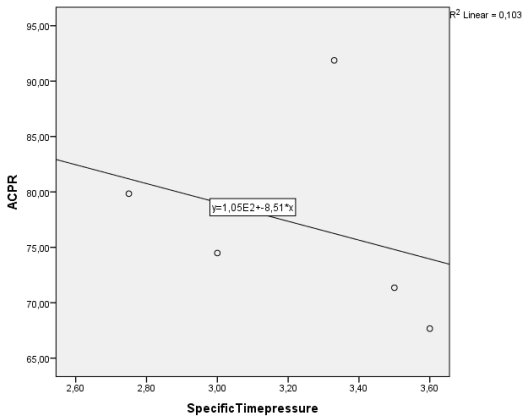
ACPR

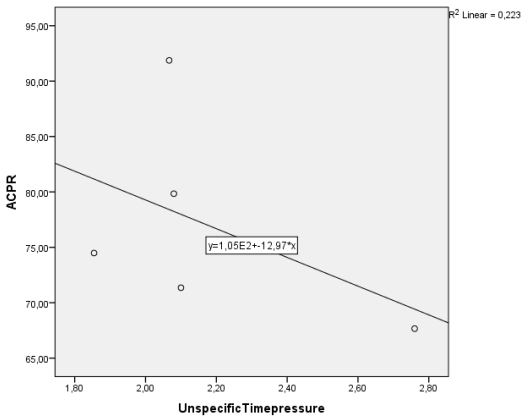

R² Linear = 0,065
ACPR
y=89,49+-4,7*x
Occupancy

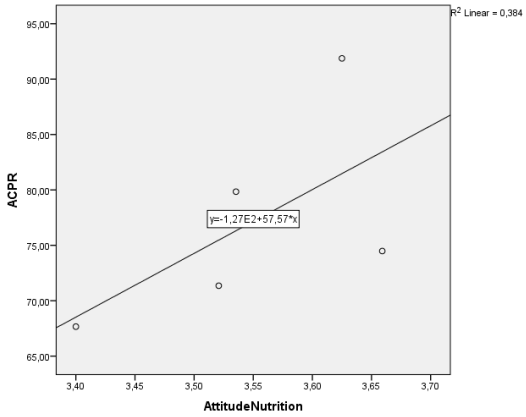

R² Linear = 0,191
ACPR
y=92,15+-7,86*x
Information

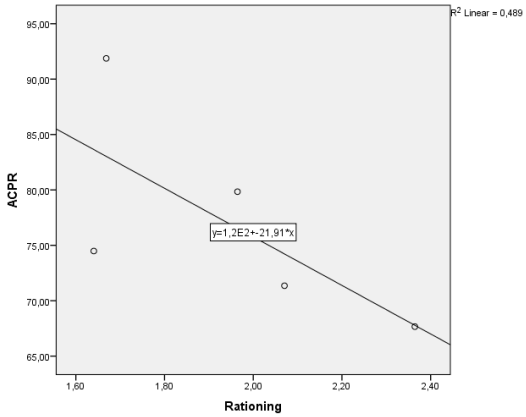

R² Linear = 0,023
ACPR
y=71,8+2,09*x
FluctuationAbsenteeism

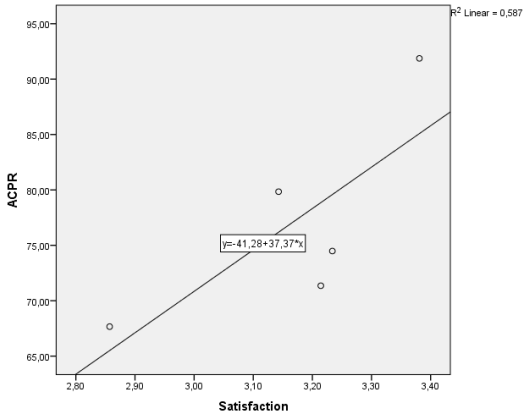

R² Linear = 0,074
ACPR
y=91,21+-6,94*x
Soc.Stress

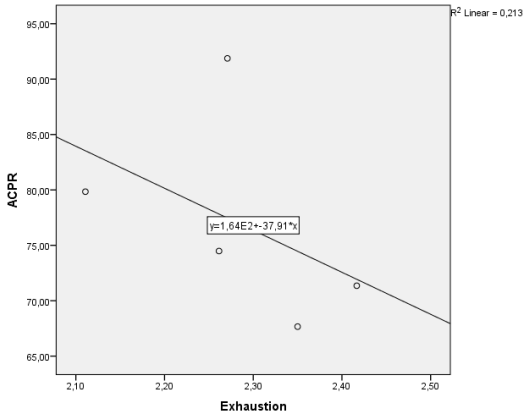

R² Linear = 0,103
ACPR
y=1,05E2+-8,51*x
SpecificTimepressure


R² Linear = 0,223
ACPR
y=1,05E2+-12,97*x
UnspecificTimepressure

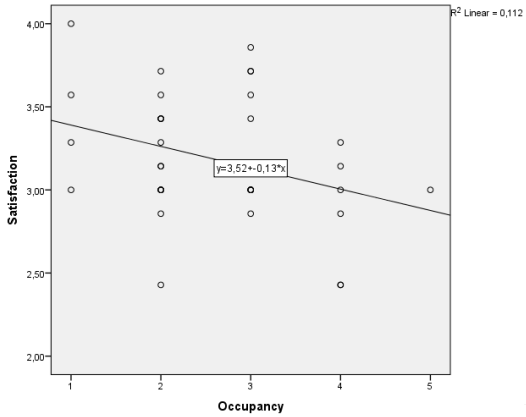


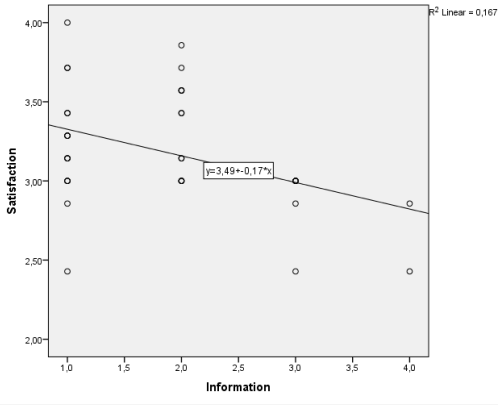


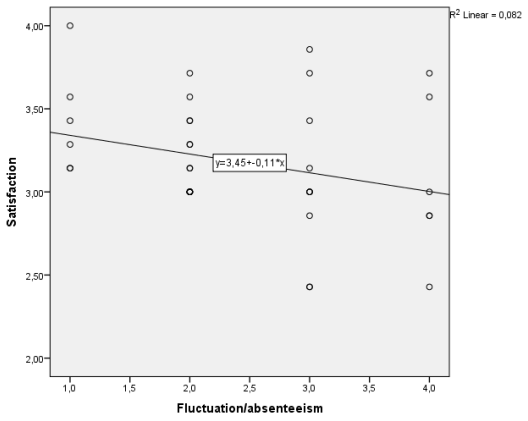


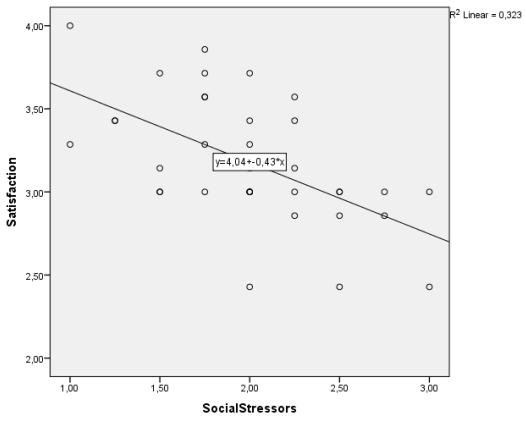


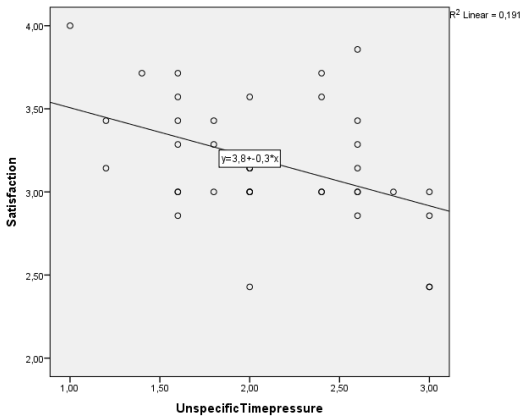
Satisfaction

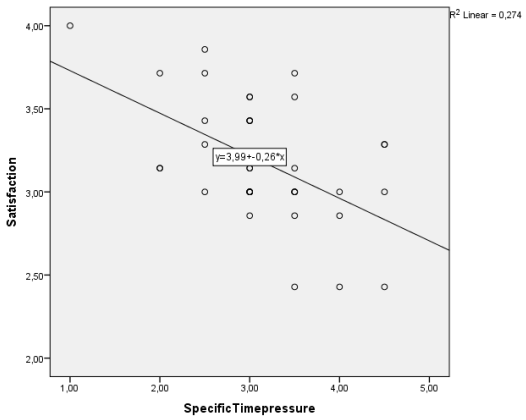


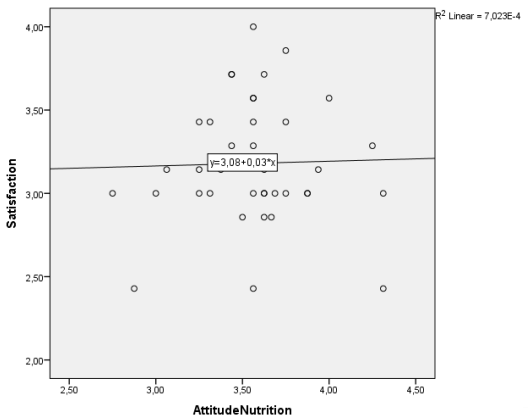


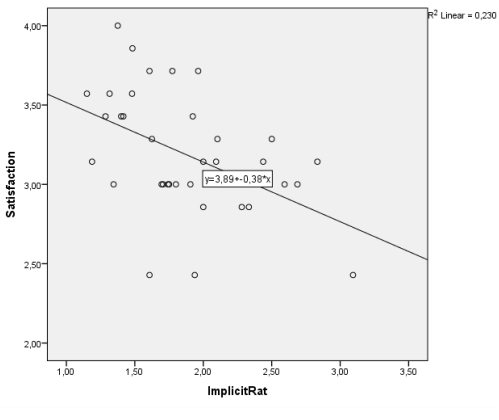

R² Linear = 0,082
y=3,45+-0,11*x
Satisfaction
Fluctuation/absenteeism


R² Linear = 0,323
y=4,04+-0,43*x
Satisfaction
SocialStressors

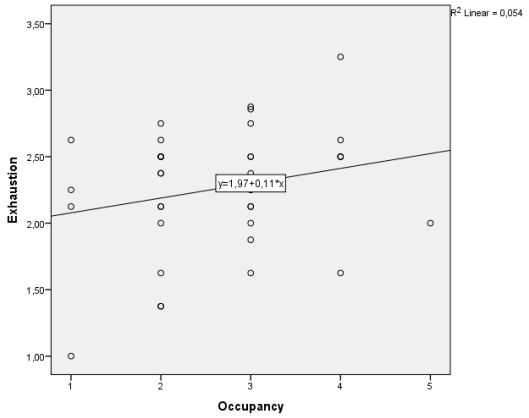

R² Linear = 0,191
y=3,8+-0,3*x
Satisfaction
UnspecificTimepressure

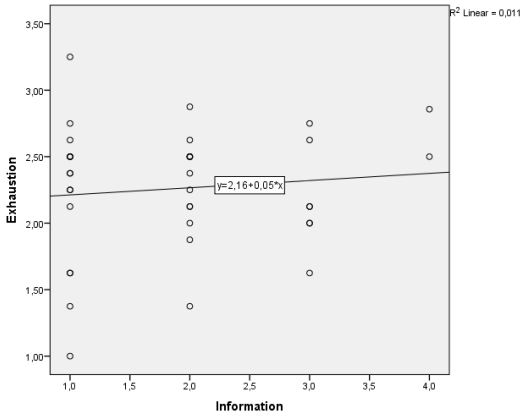

R² Linear = 0,274
y=3,99+-0,26*x
Satisfaction
SpecificTimepressure

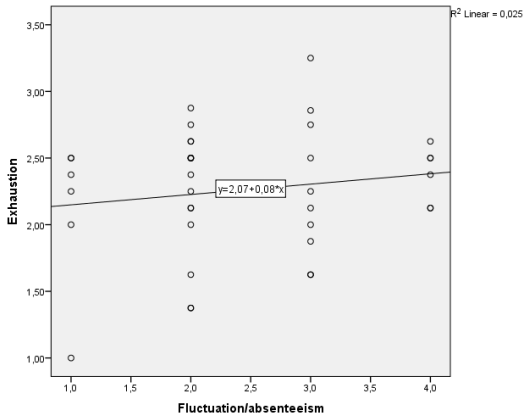

R² Linear = 7,023E-4
y=3,08+0,03*x
Satisfaction
AttitudeNutrition

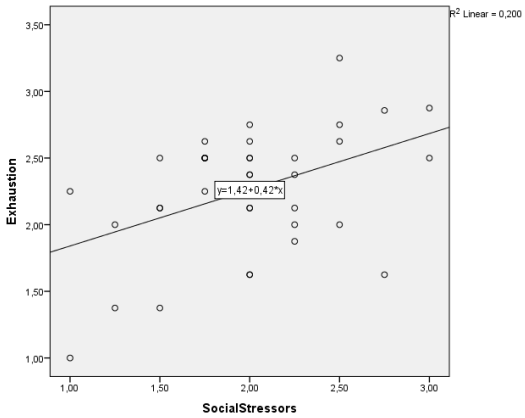

R² Linear = 0,230
y=3,89+-0,38*x
Satisfaction
ImplicitRat

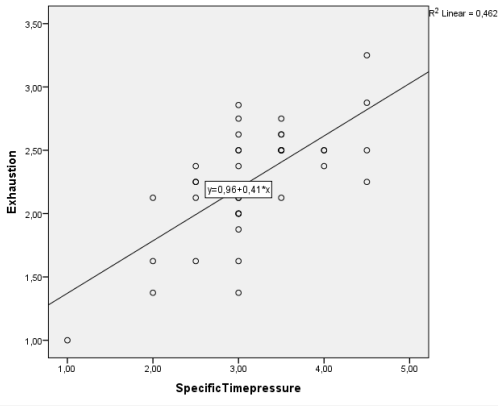
Exhaustion

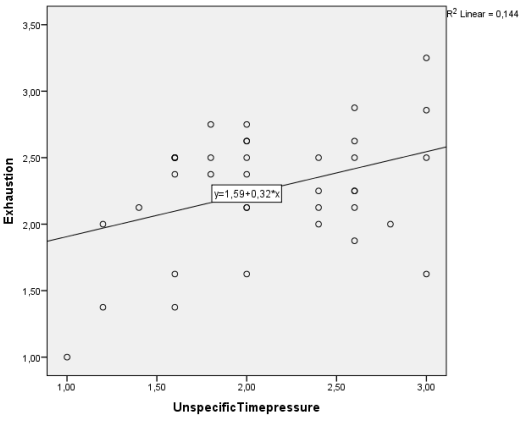

R² Linear = 0,054
y=1,97+0,11*x
Exhaustion
Occupancy

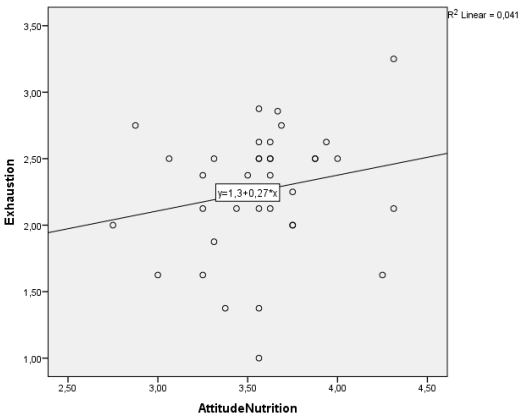

R² Linear = 0,011
y=2,16+0,05*x
Exhaustion
Information

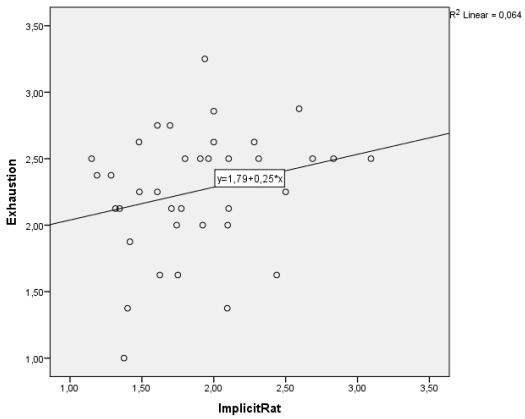

R² Linear = 0,025
y=2,07+0,08*x
Exhaustion
Fluctuation/absenteeism


R² Linear = 0,200
y=1,42+0,42*x
Exhaustion
SocialStressors


R² Linear = 0,462
y=0,96+0,41*x
Exhaustion
SpecificTimepressure


R² Linear = 0,144
y=1,59+0,32*x
Exhaustion
UnspecificTimepressure


R² Linear = 0,041
y=1,3+0,27*x
Exhaustion
AttitudeNutrition
3,50
3,00
2,50
2,00
1,50
1,00
2,50
3,00
3,50
4,00
4,50


R² Linear = 0,064
y=1,79+0,25*x
Exhaustion
ImplicitRat
3,50
3,00
2,50
2,00
1,50
1,00
1,00
1,50
2,00
2,50
3,00
3,50

Appendix G: Regression Analysis

Multicollinearity

Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	UnspecificTimepressure	,443	2,260
	Occupancy	,567	1,765
	SocialStressors	,425	2,353
	Information	,705	1,419
	Fluctuation/absenteeism	,713	1,402
	AttitudeNutrition	,920	1,087
	ImplicitRat	,819	1,222

a. Dependent Variable: SpecificTimepressure

Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	Occupancy	,601	1,664
	SocialStressors	,495	2,022
	Information	,769	1,300
	Fluctuation/absenteeism	,713	1,402
	AttitudeNutrition	,867	1,153
	ImplicitRat	,699	1,430
	SpecificTimepressure	,695	1,438

a. Dependent Variable: UnspecificTimepressure

Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	SocialStressors	,460	2,176
	Information	,694	1,440
	Fluctuation/absenteeism	,750	1,333
	AttitudeNutrition	,857	1,166
	ImplicitRat	,709	1,410
	SpecificTimepressure	,651	1,536
	UnspecificTimepressure	,439	2,276

a. Dependent Variable: Occupancy

Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	Information	,708	1,413
	Fluctuation/absenteeism	,740	1,351
	AttitudeNutrition	,838	1,193
	ImplicitRat	,699	1,430
	SpecificTimepressure	,651	1,536
	UnspecificTimepressure	,482	2,074
	Occupancy	,613	1,631

a. Dependent Variable: SocialStressors

Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	Fluctuation/absenteeism	,729	1,373
	AttitudeNutrition	,838	1,193
	ImplicitRat	,702	1,425
	SpecificTimepressure	,663	1,509
	UnspecificTimepressure	,460	2,173
	Occupancy	,568	1,760
	SocialStressors	,434	2,302

a. Dependent Variable: Information

Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	AttitudeNutrition	,845	1,183
	ImplicitRat	,699	1,431
	SpecificTimepressure	,650	1,538
	UnspecificTimepressure	,414	2,417
	Occupancy	,595	1,679
	SocialStressors	,440	2,271
	Information	,706	1,416

a. Dependent Variable: Fluctuation/absenteeism

Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	ImplicitRat	,755	1,325
	SpecificTimepressure	,709	1,410
	UnspecificTimepressure	,425	2,350
	Occupancy	,576	1,738
	SocialStressors	,422	2,370
	Information	,687	1,455
	Fluctuation/absenteeism	,715	1,398

a. Dependent Variable: AttitudeNutrition

Coefficients[a]

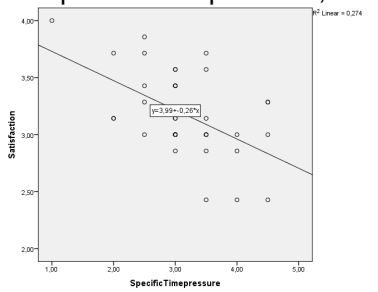
Model		Collinearity Statistics	
		Tolerance	VIF
1	SpecificTimepressure	,757	1,320
	UnspecificTimepressure	,412	2,429
	Occupancy	,571	1,751
	SocialStressors	,422	2,368
	Information	,691	1,448
	Fluctuation/absenteeism	,709	1,410
	AttitudeNutrition	,906	1,104

a. Dependent Variable: ImplicitRat

DV: Satisfaction

Test for Autocorrelation with Durbin-Watson test
None of the variables autocorrelate with the DV variable Satisfaction

Homoscedasticity: satisfaction violates according to the Levenes test the assumption of homoscedasticity, no other variable does that in this calculation
Linearity: assumption unclear in variable attitude
Multicollinearity: no multicollinearity in the independent variables
IV: Specific time pressure, DV: satisfaction



Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	SpecificTimepressure[b]	.	Enter

a. Dependent Variable: Satisfaction
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,524[a]	,274	,254	,32162	1,986

a. Predictors: (Constant), SpecificTimepressure
b. Dependent Variable: Satisfaction

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,406	1	1,406	13,594	,001[b]
	Residual	3,724	36	,103		
	Total	5,130	37			

a. Dependent Variable: Satisfaction
b. Predictors: (Constant), SpecificTimepressure

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,986	,225		17,752	,000
	SpecificTimepressure	-,256	,069	-,524	-3,687	,001

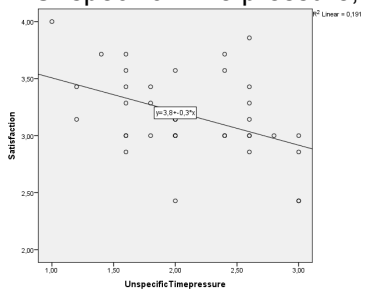
a. Dependent Variable: Satisfaction

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2,8335	3,7295	3,1805	,19495	38
Residual	-,66093	,62479	,00000	,31724	38
Std. Predicted Value	-1,780	2,817	,000	1,000	38
Std. Residual	-2,055	1,943	,000	,986	38

a. Dependent Variable: Satisfaction

IV:Unspecific Time pressure, DV: satisfaction



Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	UnspecificTimepressure[b]	.	Enter

a. Dependent Variable: Satisfaction

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,437[a]	,191	,169	,33952	1,872

a. Predictors: (Constant), UnspecificTimepressure

b. Dependent Variable: Satisfaction

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,980	1	,980	8,502	,006[b]
	Residual	4,150	36	,115		
	Total	5,130	37			

a. Dependent Variable: Satisfaction

b. Predictors: (Constant), UnspecificTimepressure

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,802	,220		17,278	,000
	UnspecificTimepressure	-,295	,101	-,437	-2,916	,006

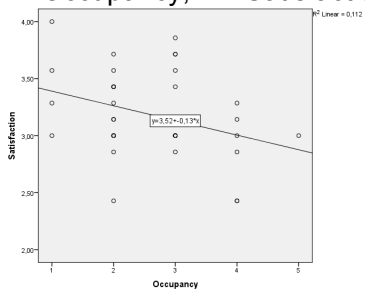
a. Dependent Variable: Satisfaction

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2,9165	3,5065	3,1805	,16275	38
Residual	-,78294	,82266	,00000	,33490	38
Std. Predicted Value	-1,622	2,004	,000	1,000	38
Std. Residual	-2,306	2,423	,000	,986	38

a. Dependent Variable: Satisfaction

IV: Occupancy, DV Satisfaction



Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Occupancy[b]	.	Enter

a. Dependent Variable: Satisfaction

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,335[a]	,112	,087	,35573	1,856

a. Predictors: (Constant), Occupancy

b. Dependent Variable: Satisfaction

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,574	1	,574	4,539	,040[b]
	Residual	4,556	36	,127		
	Total	5,130	37			

a. Dependent Variable: Satisfaction

b. Predictors: (Constant), Occupancy

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,518	,169		20,848	,000
	Occupancy	-,128	,060	-,335	-2,131	,040

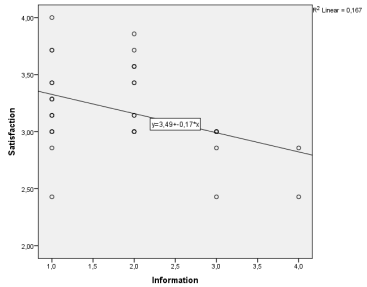
a. Dependent Variable: Satisfaction

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2,8763	3,3899	3,1805	,12460	38
Residual	-,83297	,72400	,00000	,35089	38
Std. Predicted Value	-2,441	1,681	,000	1,000	38
Std. Residual	-2,342	2,035	,000	,986	38

a. Dependent Variable: Satisfaction

IV: Information, DV: Satisfaction



Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Information[b]	.	Enter

a. Dependent Variable: Satisfaction

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,409[a]	,167	,144	,34454	1,922

a. Predictors: (Constant), Information

b. Dependent Variable: Satisfaction

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,856	1	,856	7,215	,011[b]
	Residual	4,274	36	,119		
	Total	5,130	37			

a. Dependent Variable: Satisfaction

b. Predictors: (Constant), Information

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,494	,130		26,974	,000
	Information	-,168	,063	-,409	-2,686	,011

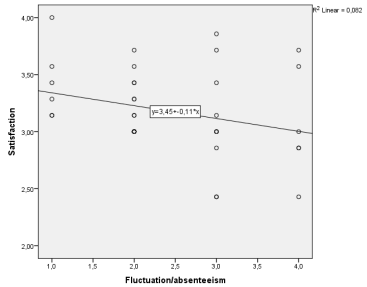
a. Dependent Variable: Satisfaction

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2,8223	3,3264	3,1805	,15214	38
Residual	-,89778	,69880	,00000	,33985	38
Std. Predicted Value	-2,354	,959	,000	1,000	38
Std. Residual	-2,606	2,028	,000	,986	38

a. Dependent Variable: Satisfaction

IV: Fluctuation, DV: Satisfaction



Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Fluctuation/absenteeism[b]	.	Enter

a. Dependent Variable: Satisfaction

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,287[a]	,082	,057	,36165	1,986

a. Predictors: (Constant), Fluctuation/absenteeism

b. Dependent Variable: Satisfaction

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,421	1	,421	3,223	,081[b]
	Residual	4,708	36	,131		
	Total	5,130	37			

a. Dependent Variable: Satisfaction

b. Predictors: (Constant), Fluctuation/absenteeism

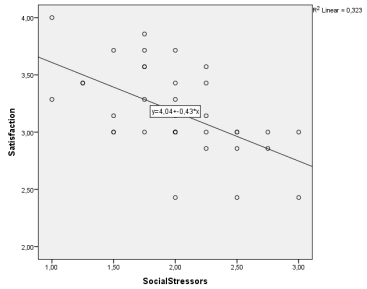
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,453	,163		21,216	,000
	Fluctuation/absenteeism	-,113	,063	-,287	-1,795	,081

a. Dependent Variable: Satisfaction
Hier keine signifikanz beim Beta

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3,0027	3,3404	3,1805	,10673	38
Residual	-,68671	,74186	,00000	,35673	38
Std. Predicted Value	-1,665	1,499	,000	1,000	38
Std. Residual	-1,899	2,051	,000	,986	38

a. Dependent Variable: Satisfaction
IV: Social Stressors, DV: Satisfaction



Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,568[a]	,323	,304	,31061	1,679

a. Predictors: (Constant), SocialStressors
b. Dependent Variable: Satisfaction

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	SocialStressors[b]	.	Enter

a. Dependent Variable: Satisfaction
b. All requested variables entered.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,657	1	1,657	17,173	,000[b]
	Residual	3,473	36	,096		
	Total	5,130	37			

a. Dependent Variable: Satisfaction
b. Predictors: (Constant), SocialStressors

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4,039	,213		18,946	,000
	SocialStressors	-,431	,104	-,568	-4,144	,000

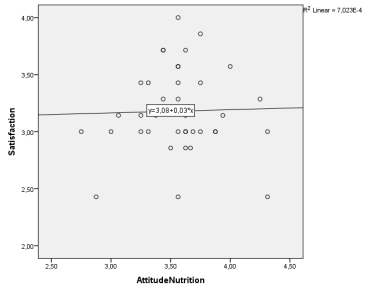
a. Dependent Variable: Satisfaction

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2,7470	3,6082	3,1805	,21161	38
Residual	-,74905	,57188	,00000	,30638	38
Std. Predicted Value	-2,048	2,021	,000	1,000	38
Std. Residual	-2,412	1,841	,000	,986	38

a. Dependent Variable: Satisfaction

IV: Attitude, DV: Satisfaction



Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	AttitudeNutrition[b]	.	Enter

a. Dependent Variable: Satisfaction

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,027[a]	,001	-,027	,37736	2,005

a. Predictors: (Constant), AttitudeNutrition

b. Dependent Variable: Satisfaction

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,004	1	,004	,025	,875[b]
	Residual	5,126	36	,142		
	Total	5,130	37			

a. Dependent Variable: Satisfaction

b. Predictors: (Constant), AttitudeNutrition

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,079	,639		4,822	,000
	AttitudeNutrition	,028	,178	,027	,159	,875

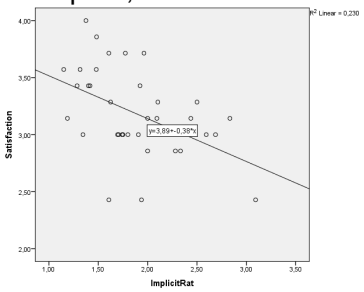
a. Dependent Variable: Satisfaction

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3,1573	3,2016	3,1805	,00987	38
Residual	-,77307	,81963	,00000	,37222	38
Std. Predicted Value	-2,343	2,148	,000	1,000	38
Std. Residual	-2,049	2,172	,000	,986	38

a. Dependent Variable: Satisfaction

IV: Implicit, DV: Satisfaction



Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	ImplicitRat[b]	.	Enter

a. Dependent Variable: Satisfaction

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,479[a]	,230	,208	,33135	2,303

a. Predictors: (Constant), ImplicitRat

b. Dependent Variable: Satisfaction

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,177	1	1,177	10,724	,002[b]
	Residual	3,953	36	,110		
	Total	5,130	37			

a. Dependent Variable: Satisfaction

b. Predictors: (Constant), ImplicitRat

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,892	,224		17,391	,000
	ImplicitRat	-,376	,115	-,479	-3,275	,002

a. Dependent Variable: Satisfaction

Residuals Statistics[a]

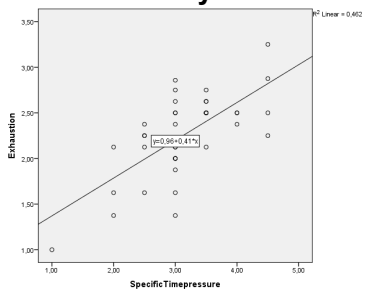
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2,7294	3,4597	3,1805	,17839	38
Residual	-,85940	,62480	,00000	,32684	38
Std. Predicted Value	-2,529	1,566	,000	1,000	38
Std. Residual	-2,594	1,886	,000	,986	38

a. Dependent Variable: Satisfaction

DV: Exhaustion

Test for Autocorrelation with Durbin-Watson test
None of the variables autocorrelate with the DV variable Exhaustion

Homoscedasticity: none of the variable violates this assumption
Linearity: assumption unclear in variable attitude and implicit rationing
Multicollinearity: no multicollinearity in the independent variables



Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	SpecificTimepressure[b]	.	Enter

a. Dependent Variable: Exhaustion
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,680[a]	,462	,447	,34475	,462	30,966	1	36	,000	1,993

a. Predictors: (Constant), SpecificTimepressure
b. Dependent Variable: Exhaustion

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3,680	1	3,680	30,966	,000[b]
	Residual	4,279	36	,119		
	Total	7,959	37			

a. Dependent Variable: Exhaustion
b. Predictors: (Constant), SpecificTimepressure

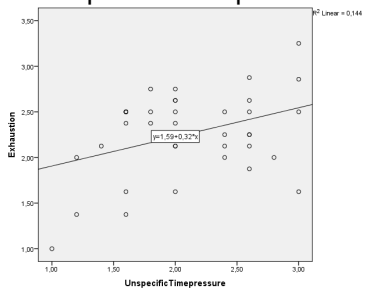
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,957	,241		3,976	,000
	SpecificTimepressure	,414	,074	,680	5,565	,000

a. Dependent Variable: Exhaustion

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1,3711	2,8207	2,2594	,31539	38
Residual	-,82445	,65769	,00000	,34006	38
Std. Predicted Value	-2,817	1,780	,000	1,000	38
Std. Residual	-2,391	1,908	,000	,986	38

a. Dependent Variable: Exhaustion
IV: unspecific time pressure



Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	UnspecificTimepressure[b]	.	Enter

a. Dependent Variable: Exhaustion
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,380[a]	,144	,120	,43498	,144	6,065	1	36	,019	2,275

a. Predictors: (Constant), UnspecificTimepressure
b. Dependent Variable: Exhaustion

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,148	1	1,148	6,065	,019[b]
	Residual	6,811	36	,189		
	Total	7,959	37			

a. Dependent Variable: Exhaustion
b. Predictors: (Constant), UnspecificTimepressure

Coefficients[a]

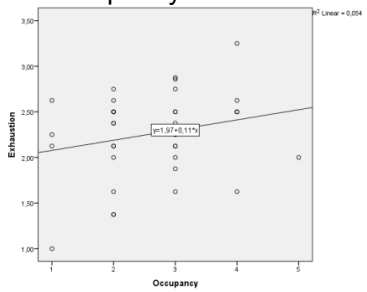
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,587	,282		5,631	,000
	UnspecificTimepressure	,319	,130	,380	2,463	,019

a. Dependent Variable: Exhaustion

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1,9065	2,5451	2,2594	,17611	38
Residual	-,92005	,70495	,00000	,42906	38
Std. Predicted Value	-2,004	1,622	,000	1,000	38
Std. Residual	-2,115	1,621	,000	,986	38

a. Dependent Variable: Exhaustion
IV: Occupancy



Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Occupancy[b]	.	Enter

a. Dependent Variable: Exhaustion
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,233[a]	,054	,028	,45724	,054	2,068	1	36	,159	2,153

a. Predictors: (Constant), Occupancy
b. Dependent Variable: Exhaustion

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,432	1	,432	2,068	,159[b]
	Residual	7,527	36	,209		
	Total	7,959	37			

a. Dependent Variable: Exhaustion
b. Predictors: (Constant), Occupancy

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1,966	,217		9,064	,000
	Occupancy	,111	,077	,233	1,438	,159

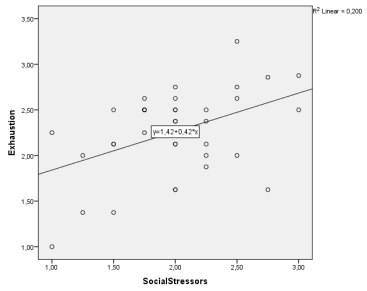
a. Dependent Variable: Exhaustion

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2,0776	2,5233	2,2594	,10811	38
Residual	-1,07763	,83815	,00000	,45102	38
Std. Predicted Value	-1,681	2,441	,000	1,000	38
Std. Residual	-2,357	1,833	,000	,986	38

a. Dependent Variable: Exhaustion

IV: Social Stressors



Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	SocialStressors[b]	.	Enter

a. Dependent Variable: Exhaustion
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,447[a]	,200	,178	,42059	,200	8,992	1	36	,005	2,006

a. Predictors: (Constant), SocialStressors
b. Dependent Variable: Exhaustion

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,591	1	1,591	8,992	,005[b]
	Residual	6,368	36	,177		
	Total	7,959	37			

a. Dependent Variable: Exhaustion
b. Predictors: (Constant), SocialStressors

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,418	,289		4,914	,000
	SocialStressors	,422	,141	,447	2,999	,005

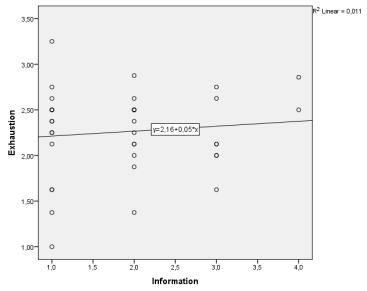
a. Dependent Variable: Exhaustion

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1,8403	2,6841	2,2594	,20735	38
Residual	-,95361	,77687	,00000	,41487	38
Std. Predicted Value	-2,021	2,048	,000	1,000	38
Std. Residual	-2,267	1,847	,000	,986	38

a. Dependent Variable: Exhaustion

IV: Information



Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Information[b]	.	Enter

a. Dependent Variable: Exhaustion
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,105[a]	,011	-,016	,46758	,011	,404	1	36	,529	2,283

a. Predictors: (Constant), Information
b. Dependent Variable: Exhaustion

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,159	,176		12,278	,000
	Information	,054	,085	,105	,635	,529

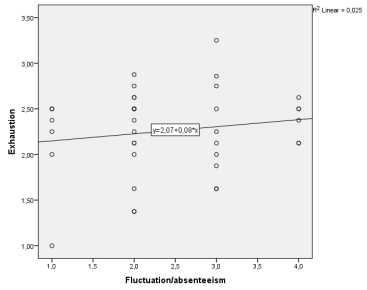
a. Dependent Variable: Exhaustion

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2,2126	2,3743	2,2594	,04884	38
Residual	-1,21257	1,03743	,00000	,46122	38
Std. Predicted Value	-,959	2,354	,000	1,000	38
Std. Residual	-2,593	2,219	,000	,986	38

a. Dependent Variable: Exhaustion

IV: fluctuation



Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Fluctuation/absenteeism[b]	.	Enter

a. Dependent Variable: Exhaustion

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,159[a]	,025	-,002	,46424	,025	,930	1	36	,341	2,268

a. Predictors: (Constant), Fluctuation/absenteeism

b. Dependent Variable: Exhaustion

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,200	1	,200	,930	,341[b]
	Residual	7,759	36	,216		
	Total	7,959	37			

a. Dependent Variable: Exhaustion

b. Predictors: (Constant), Fluctuation/absenteeism

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,071	,209		9,915	,000
	Fluctuation/absenteeism	,078	,080	,159	,964	,341

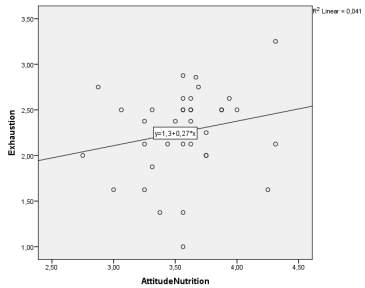
a. Dependent Variable: Exhaustion

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2,1491	2,3820	2,2594	,07359	38
Residual	-1,14910	,94567	,00000	,45792	38
Std. Predicted Value	-1,499	1,665	,000	1,000	38
Std. Residual	-2,475	2,037	,000	,986	38

a. Dependent Variable: Exhaustion

IV: Attitude



Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	AttitudeNutrition[b]	.	Enter

a. Dependent Variable: Exhaustion
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,201[a]	,041	,014	,46055	,041	1,523	1	36	,225	2,290

a. Predictors: (Constant), AttitudeNutrition
b. Dependent Variable: Exhaustion

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,323	1	,323	1,523	,225[b]
	Residual	7,636	36	,212		
	Total	7,959	37			

a. Dependent Variable: Exhaustion
b. Predictors: (Constant), AttitudeNutrition

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,302	,779		1,670	,104
	AttitudeNutrition	,269	,218	,201	1,234	,225

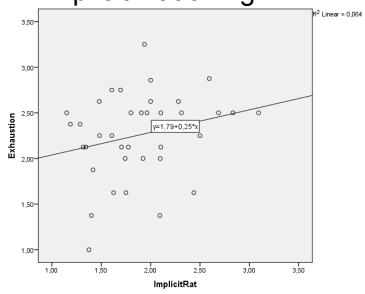
a. Dependent Variable: Exhaustion

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2,0405	2,4601	2,2594	,09344	38
Residual	-1,25866	,78993	,00000	,45429	38
Std. Predicted Value	-2,343	2,148	,000	1,000	38
Std. Residual	-2,733	1,715	,000	,986	38

a. Dependent Variable: Exhaustion

IV: Implicit Rationing



Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	ImplicitRat[b]	.	Enter

a. Dependent Variable: Exhaustion

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,253[a]	,064	,038	,45490	,064	2,461	1	36	,125	2,269

a. Predictors: (Constant), ImplicitRat

b. Dependent Variable: Exhaustion

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,509	1	,509	2,461	,125[b]
	Residual	7,450	36	,207		
	Total	7,959	37			

a. Dependent Variable: Exhaustion

b. Predictors: (Constant), ImplicitRat

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,792	,307		5,831	,000
	ImplicitRat	,247	,158	,253	1,569	,125

a. Dependent Variable: Exhaustion

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2,0757	2,5561	2,2594	,11733	38
Residual	-1,13131	,97968	,00000	,44871	38
Std. Predicted Value	-1,566	2,529	,000	1,000	38
Std. Residual	-2,487	2,154	,000	,986	38

a. Dependent Variable: Exhaustion

Appendix H: Multiple Regression Analysis

Correlations

		Satisfaction	SpecificTimepressure	UnspecificTimepressure	Occupancy	SocialStressors	Information	Fluctuation/absenteeism	AttitudeNutrition	ImplicitRat	Exhaustion
Pearson Correlation	Satisfaction	1,000	-,524	-,437	-,335	-,568	-,409	-,287	,027	-,479	-,454
	SpecificTimepressure	-,524	1,000	,394	,257	,346	,048	,213	,142	,441	,680
	UnspecificTimepressure	-,437	,394	1,000	,539	,681	,483	,357	-,154	,335	,380
	Occupancy	-,335	,257	,539	1,000	,590	,251	,438	,013	,293	,233
	SocialStressors	-,568	,346	,681	,590	1,000	,438	,470	-,067	,308	,447
	Information	-,409	,048	,483	,251	,438	1,000	,318	-,131	,073	,105
	Fluctuation/absenteeism	-,287	,213	,357	,438	,470	,318	1,000	-,103	,224	,159
	AttitudeNutrition	,027	,142	-,154	,013	-,067	-,131	-,103	1,000	-,197	,201
	ImplicitRat	-,479	,441	,335	,293	,308	,073	,224	-,197	1,000	,253
	Exhaustion	-,454	,680	,380	,233	,447	,105	,159	,201	,253	1,000
Sig. (1-tailed)	Satisfaction	.	,000	,003	,020	,000	,005	,041	,437	,001	,002
	SpecificTimepressure	,000	.	,007	,060	,017	,387	,100	,198	,003	,000
	UnspecificTimepressure	,003	,007	.	,000	,000	,001	,014	,178	,020	,009
	Occupancy	,020	,060	,000	.	,000	,064	,003	,469	,037	,080
	SocialStressors	,000	,017	,000	,000	.	,003	,001	,346	,030	,002
	Information	,005	,387	,001	,064	,003	.	,026	,216	,332	,265
	Fluctuation/absenteeism	,041	,100	,014	,003	,001	,026	.	,270	,088	,171
	AttitudeNutrition	,437	,198	,178	,469	,346	,216	,270	.	,118	,113
	ImplicitRat	,001	,003	,020	,037	,030	,332	,088	,118	.	,063
	Exhaustion	,002	,000	,009	,080	,002	,265	,171	,113	,063	.
N	Satisfaction	38	38	38	38	38	38	38	38	38	38
	SpecificTimepressure	38	38	38	38	38	38	38	38	38	38
	UnspecificTimepressure	38	38	38	38	38	38	38	38	38	38
	Occupancy	38	38	38	38	38	38	38	38	38	38
	SocialStressors	38	38	38	38	38	38	38	38	38	38
	Information	38	38	38	38	38	38	38	38	38	38
	Fluctuation/absenteeism	38	38	38	38	38	38	38	38	38	38
	AttitudeNutrition	38	38	38	38	38	38	38	38	38	38
	ImplicitRat	38	38	38	38	38	38	38	38	38	38
	Exhaustion	38	38	38	38	38	38	38	38	38	38

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	SocialStressors	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).
2	SpecificTimepressure	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).

a. Dependent Variable: Satisfaction

Model Summaryc

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,568[a]	,323	,304	,31061	
2	,667[b]	,444	,413	,28535	1,903

a. Predictors: (Constant), SocialStressors

b. Predictors: (Constant), SocialStressors, SpecificTimepressure

c. Dependent Variable: Satisfaction

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,657	1	1,657	17,173	,000[b]
	Residual	3,473	36	,096		
	Total	5,130	37			
2	Regression	2,280	2	1,140	14,002	,000[c]
	Residual	2,850	35	,081		
	Total	5,130	37			

a. Dependent Variable: Satisfaction

b. Predictors: (Constant), SocialStressors

c. Predictors: (Constant), SocialStressors, SpecificTimepressure

Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	4,039	,213		18,946	,000					
	SocialStressors	-,431	,104	-,568	-4,144	,000	-,568	-,568	-,568	1,000	1,000
2	(Constant)	4,416	,239		18,506	,000					
	SocialStressors	-,333	,102	-,440	-3,276	,002	-,568	-,484	-,413	,881	1,136
	SpecificTimepressure	-,182	,066	-,371	-2,767	,009	-,524	-,424	-,349	,881	1,136

a. Dependent Variable: Satisfaction

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	SpecificTimepressure	-,371[b]	-2,767	,009	-,424	,881	1,136	,881
	UnspecificTimepressure	-,094[b]	-,496	,623	-,083	,537	1,863	,537
	Occupancy	,001[b]	,005	,996	,001	,652	1,534	,652
	Information	-,197[b]	-1,307	,200	-,216	,808	1,238	,808
	Fluctuation/absenteeism	-,025[b]	-,159	,875	-,027	,779	1,284	,779
	AttitudeNutrition	-,011[b]	-,082	,935	-,014	,996	1,004	,996
	ImplicitRat	-,336[b]	-2,493	,018	-,388	,905	1,105	,905
	Exhaustion	-,250[b]	-1,670	,104	-,272	,800	1,250	,800
2	UnspecificTimepressure	,017[c]	,094	,925	,016	,508	1,967	,508
	Occupancy	,031[c]	,197	,845	,034	,649	1,541	,612
	Information	-,249[c]	-1,819	,078	-,298	,796	1,257	,702
	Fluctuation/absenteeism	-,001[c]	-,007	,994	-,001	,776	1,288	,716
	AttitudeNutrition	,052[c]	,399	,693	,068	,965	1,037	,853
	ImplicitRat	-,231[c]	-1,657	,107	-,273	,778	1,285	,757
	Exhaustion	-,010[c]	-,053	,958	-,009	,487	2,055	,487

a. Dependent Variable: Satisfaction
b. Predictors in the Model: (Constant), SocialStressors
c. Predictors in the Model: (Constant), SocialStressors, SpecificTimepressure

Collinearity Diagnosticsa

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	SocialStressors	SpecificTimepressure
1	1	1,972	1,000	,01	,01	
	2	,028	8,341	,99	,99	
2	1	2,939	1,000	,00	,01	,01
	2	,036	9,038	,00	,72	,62
	3	,025	10,815	,99	,27	,37

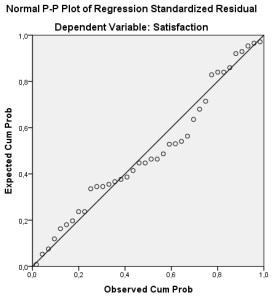
a. Dependent Variable: Satisfaction

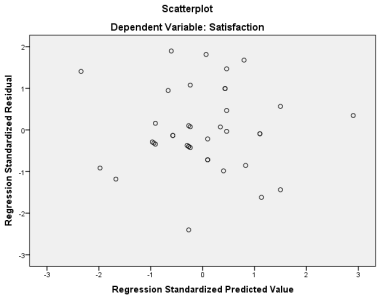
Residuals Statisticsa

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2,5988	3,9012	3,1805	,24825	38
Residual	-,68515	,54103	,00000	,27753	38
Std. Predicted Value	-2,343	2,903	,000	1,000	38
Std. Residual	-2,401	1,896	,000	,973	38

a. Dependent Variable: Satisfaction

Charts





		Exhaustion	SpecificTimepressure	UnspecificTimepressure	Occupancy	SocialStressors	Information	Fluctuation/absenteeism	AttitudeNutrition	ImplicitRat
Pearson Correlation	Exhaustion	1,000	,680	,380	,233	,447	,105	,159	,201	,253
	SpecificTimepressure	,680	1,000	,394	,257	,346	,048	,213	,142	,441
	UnspecificTimepressure	,380	,394	1,000	,539	,681	,483	,357	-,154	,335
	Occupancy	,233	,257	,539	1,000	,590	,251	,438	,013	,293
	SocialStressors	,447	,346	,681	,590	1,000	,438	,470	-,067	,308
	Information	,105	,048	,483	,251	,438	1,000	,318	-,131	,073
	Fluctuation/absenteeism	,159	,213	,357	,438	,470	,318	1,000	-,103	,224
	AttitudeNutrition	,201	,142	-,154	,013	-,067	-,131	-,103	1,000	-,197
	ImplicitRat	,253	,441	,335	,293	,308	,073	,224	-,197	1,000
Sig. (1-tailed)	Exhaustion	.	,000	,009	,080	,002	,265	,171	,113	,063
	SpecificTimepressure	,000	.	,007	,060	,017	,387	,100	,198	,003
	UnspecificTimepressure	,009	,007	.	,000	,000	,001	,014	,178	,020
	Occupancy	,080	,060	,000	.	,000	,064	,003	,469	,037
	SocialStressors	,002	,017	,000	,000	.	,003	,001	,346	,030
	Information	,265	,387	,001	,064	,003	.	,026	,216	,332
	Fluctuation/absenteeism	,171	,100	,014	,003	,001	,026	.	,270	,088
	AttitudeNutrition	,113	,198	,178	,469	,346	,216	,270	.	,118
	ImplicitRat	,063	,003	,020	,037	,030	,332	,088	,118	.
N	Exhaustion	38	38	38	38	38	38	38	38	38
	SpecificTimepressure	38	38	38	38	38	38	38	38	38
	UnspecificTimepressure	38	38	38	38	38	38	38	38	38
	Occupancy	38	38	38	38	38	38	38	38	38
	SocialStressors	38	38	38	38	38	38	38	38	38
	Information	38	38	38	38	38	38	38	38	38
	Fluctuation/absenteeism	38	38	38	38	38	38	38	38	38
	AttitudeNutrition	38	38	38	38	38	38	38	38	38
	ImplicitRat	38	38	38	38	38	38	38	38	38

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	SpecificTimepressure	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).

a. Dependent Variable: Exhaustion

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,680[a]	,462	,447	,34475	1,993

a. Predictors: (Constant), SpecificTimepressure
b. Dependent Variable: Exhaustion

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3,680	1	3,680	30,966	,000[b]
	Residual	4,279	36	,119		
	Total	7,959	37			

a. Dependent Variable: Exhaustion b. Predictors: (Constant), SpecificTimepressure

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	,957	,241		3,976	,000					
	SpecificTimepressure	,414	,074	,680	5,565	,000	,680	,680	,680	1,000	1,000

a. Dependent Variable: Exhaustion

Excluded Variables[a]

						Collinearity Statistics		
Model		Beta In	t	Sig.	Partial Correlation	Tolerance	VIF	Minimum Tolerance
1	UnspecificTimepressure	,132[b]	,996	,326	,166	,845	1,184	,845
	Occupancy	,062[b]	,489	,628	,082	,934	1,071	,934
	SocialStressors	,241[b]	1,916	,064	,308	,881	1,136	,881
	Information	,073[b]	,590	,559	,099	,998	1,002	,998
	Fluctuation/absenteeism	,015[b]	,115	,909	,020	,955	1,047	,955
	AttitudeNutrition	,107[b]	,865	,393	,145	,980	1,021	,980
	ImplicitRat	-,058[b]	-,423	,675	-,071	,805	1,242	,805

a. Dependent Variable: Exhaustion
b. Predictors in the Model: (Constant), SpecificTimepressure

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	SpecificTimepressure
1	1	1,973	1,000	,01	,01
	2	,027	8,488	,99	,99

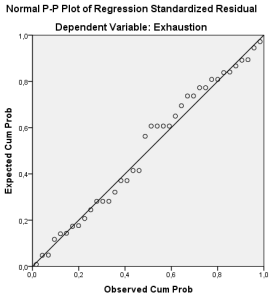
a. Dependent Variable: Exhaustion

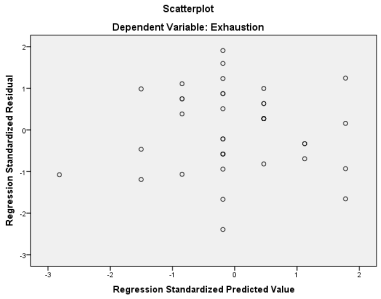
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1,3711	2,8207	2,2594	,31539	38
Residual	-,82445	,65769	,00000	,34006	38
Std. Predicted Value	-2,817	1,780	,000	1,000	38
Std. Residual	-2,391	1,908	,000	,986	38

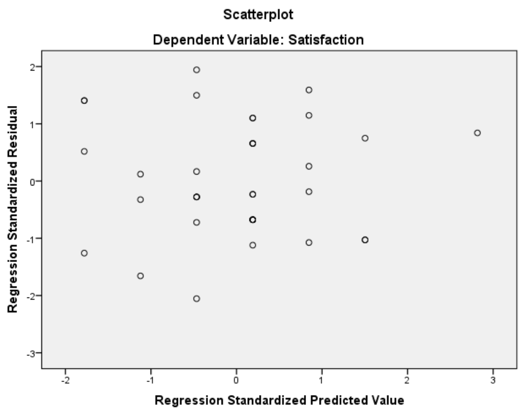
a. Dependent Variable: Exhaustion

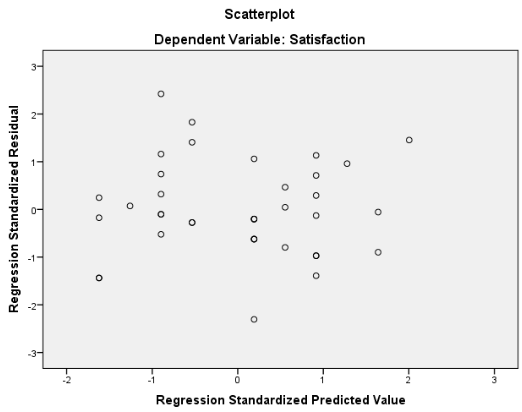
Charts

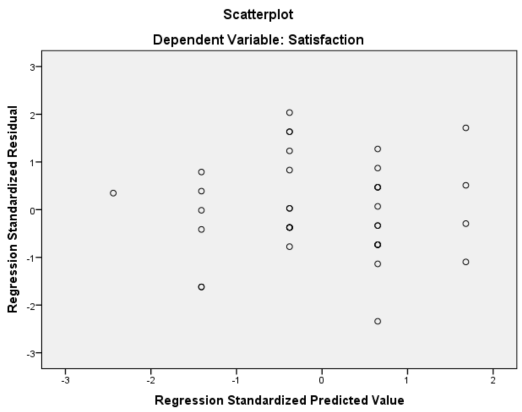


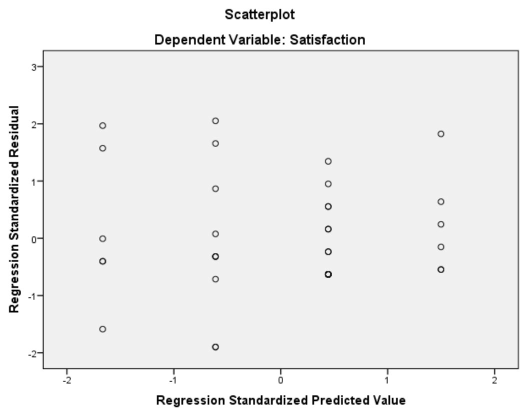


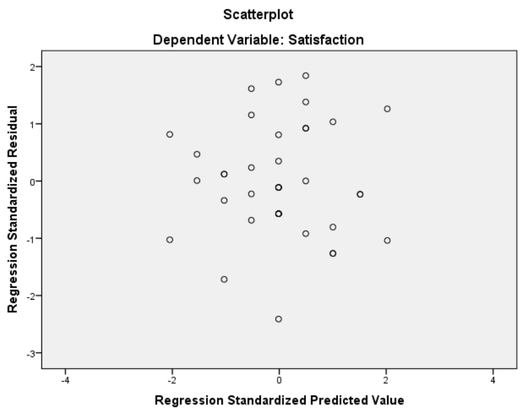
Appendix J: Homoscedasticity

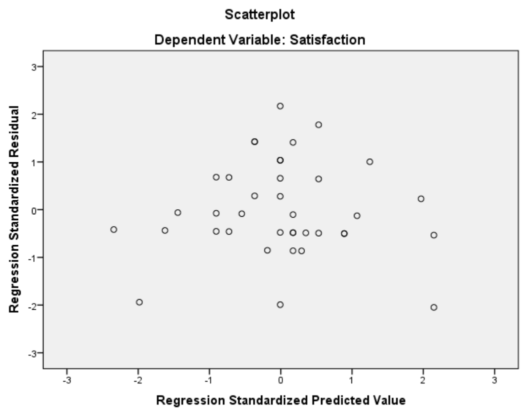


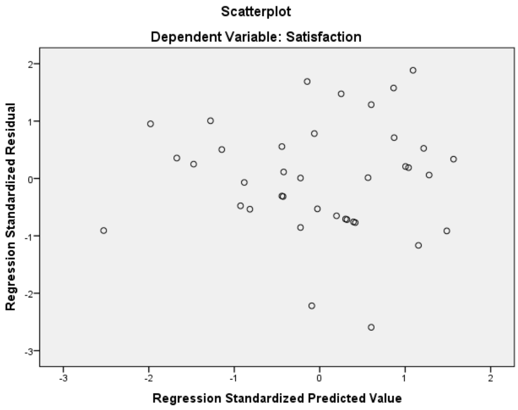








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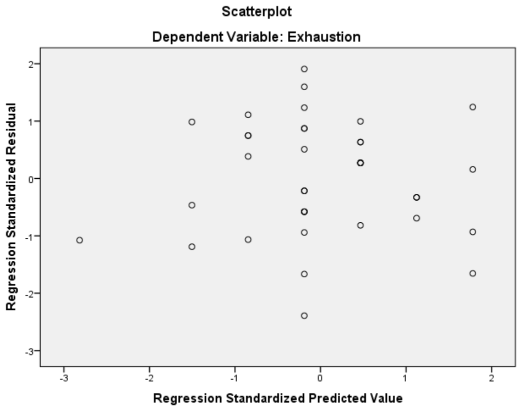
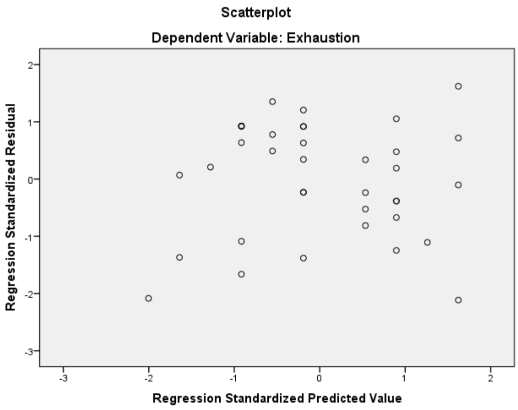
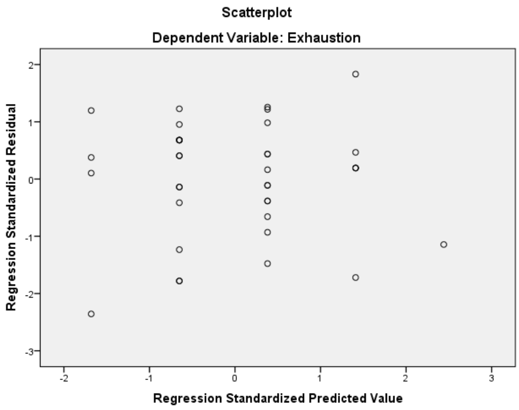
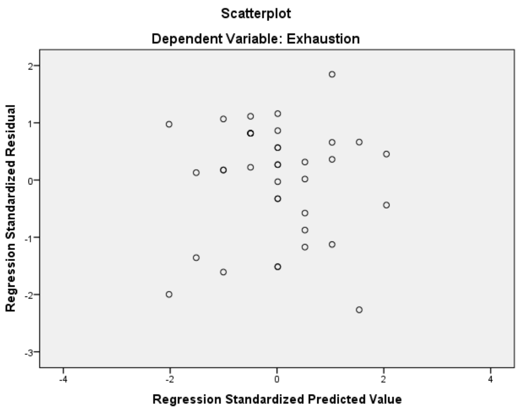
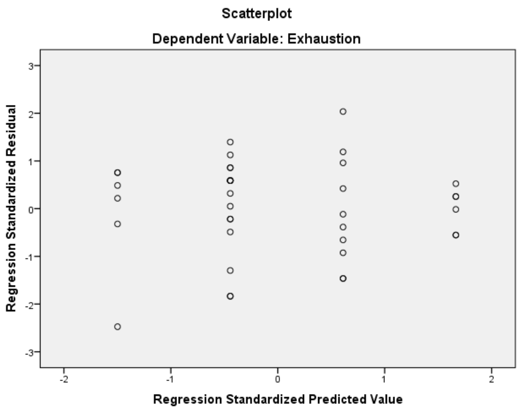
Dependent Variable: Satisfaction
Regression Standardized Residual
Regression Standardized Predicted Value

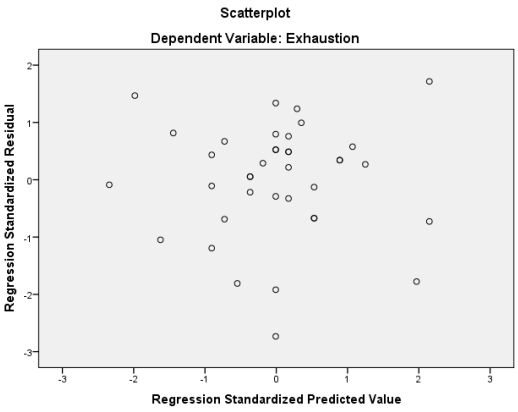

Scatterplot
Dependent Variable: Exhaustion
Regression Standardized Residual
Regression Standardized Predicted Value

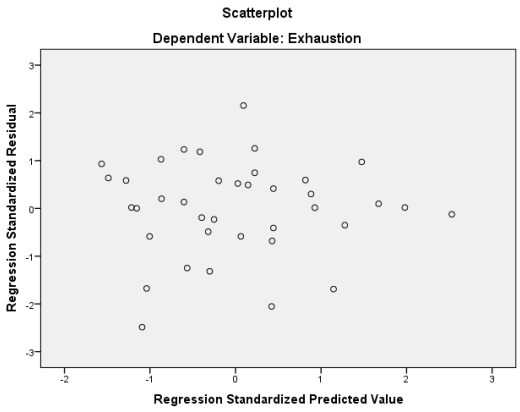

Scatterplot
Dependent Variable: Exhaustion
Regression Standardized Residual
Regression Standardized Predicted Value


Scatterplot
Dependent Variable: Exhaustion
Regression Standardized Residual
Regression Standardized Predicted Value


Scatterplot
Dependent Variable: Exhaustion
Regression Standardized Residual
Regression Standardized Predicted Value


Scatterplot
Dependent Variable: Exhaustion
Regression Standardized Residual
Regression Standardized Predicted Value


Scatterplot
Dependent Variable: Exhaustion
Regression Standardized Residual
Regression Standardized Predicted Value
2
1
0
-1
-2
-3
-3
-2
-1
0
1
2
3


Scatterplot
Dependent Variable: Exhaustion
Regression Standardized Residual
Regression Standardized Predicted Value
3
2
1
0
-1
-2
-3
-2
-1
0
1
2
3