



NUTRITION INTERVENTIONS IN PATIENTS WITH CROHN'S DISEASE

Eva Beňová, Mária Boledovičová, Erika Krištofová, Ľuboslava Pavelová

ABSTRACT

Crohn's disease is a chronic non-specific inflammatory bowel disease of any part of the digestive tract. The seriousness of the disease requires a multi-disciplinary approach when providing patients with secondary and tertiary care. Patients also have specific problems from the nursing perspective that require intervention of nurses, e.g. in the area of nutrition. The role of a nurse in a specific community lies in supporting public health in the field of prevention, health education, group educational activities and care of the acutely or chronically ill. The regulation tool of nursing practice when providing community care is the documented form of nursing data expressed by means of expert terminology. The Omaha System is a standardised terminology for multi-disciplinary teams providing community care. The objective of the research is to draw attention to the possibility of using standardised terminology of the Omaha System when supporting public health in patients with Crohn's disease with nutrition problems. The research was divided into 3 stages: in the first stage we assessed the nutrition problem in 100 patients dispensarised in gastroenterology counselling centres using a form from the Omaha System. Out of these, identified 42 patients suffered from Crohn's disease and had problems with nutrition; in the second stage we chose interventions for nutrition from the Intervention Scheme of the Omaha System: their efficiency in patients was assessed by a nurse/nutritionist in the third stage of the research when the patients came to the gastroenterology counselling centre using Problem Rating Scale for Outcomes. When comparing the initial and final nutrition assessment with socio-demographic indicators we found a statistically significant difference ($p = 0.000$) between the status assessment where women scored a more remarkable advance than men when comparing the initial and the final assessment. With respect to age groups, education and jobs, no statistically significant differences were found ($p > 0.05$). Nutrition interventions, according to the Omaha System, are linked to administering enteral and parenteral nutrition, monitoring of nutrition condition and education, management and consultancy during the diet that is individual and dependent on various factors.

Keywords: Crohn's disease; The Omaha System; Nutrition; Interventions; Outcomes

INTRODUCTION

Crohn's Disease (CD) is a chronic non-specific inflammation of any part of the digestive tract of segmental or plurisegmental nature affecting the digestive tract wall transmurally in all its layers (Zbořil, Prokopová, 2010; Dítě et al., 2010). This chronic disease is characterised by periods of inflammation deterioration (relapses) and appeasements (remissions). Moreover, it is incurable by drug treatment or surgically (Dítě et al., 2010). It onsets mainly at a young age (Dítě et al., 2010; Baumgart, 2012).

With respect to the serious nature of the disease, its incidence and prevalence, etiopathogenesis, variation of the clinical screening and treatment and changes to life quality, patients need a multi-disciplinary approach when provided with care. Dispensarisation in a gastroenterology counselling centre provides these patients with secondary and tertiary care in a joint effort of a physician – gastroenterologist and a nurse or nutritionist. The community of patients with Crohn's disease has specific problems from the nursing point of view, as these problems require specific intervention of nurses. When providing this type of community care, a new role of a

community nurse is being formed in this context. It is an autonomous role of nurses who work in a specific community in the area of prevention, health education, health care, group educational activities and care of the acutely or chronically and incurably ill (Boledovičová, Zrubcová et al, 2009; Sikorová, 2012). As nursing care is associated with medical care, nurses use expert terminology, too (Von Krogh et al., 2005). According to Vörösová et al. (2015a), the development and use of a standardised language in nursing characterises the new era of nursing. Implementation of standardised terminology into nursing via classification systems defines nursing work and makes it more visible through documentation. The regulation tool of nursing practice is the documented form of nursing data, ensuring quantified and statistically processable valid records of nursing diagnostics, care planning and nursing care effect assessment (Vörösová et al., 2007). One of the best known terminologies for community nursing is the Omaha System (Martin, 2005).

The Omaha System

The Omaha System is a research developed and evidenced comprehensive taxonomy or classification

designed for care documentation, from admittance to discharge (The Omaha System, 2009). It is a working frame for a multidisciplinary team providing community care.

According to Martin (2005), this classification system contains three interlinked components/parts: Problem Classification Scheme, Intervention Scheme a Problem Rating Scale for Outcomes. This comprehensive classification gives a clear picture of client's needs/problems, the care/interventions provided and allows for measuring and assessing results of the care provided. Its main contribution is simplicity and comprehensiveness.

At present, it is used mainly in the USA, especially in community care, while in the Czech nursing is focused on support and maintenance of individuals', families' and communities' health, disease prevention, population ageing and advance of institutionalised care into the environment of communities. In the future, it is assumed to use the Omaha system in the Czech Republic.

Problem classification scheme

The Problem Classification Scheme of the Omaha System offers a structure, terms and system for standardised assessment of needs/problems. It is divided into domains, problems, modifiers, signs and symptoms (Martin, 2005).

Under the four domains (environmental, psycho-social, physiological and health-related behaviours) there are 42 needs/problems with defined signs/symptoms for the current problem or risk factors indicating the occurrence of a possible problem. These problems are linked with proposed corresponding medical diagnoses from the International Classification of Diseases (ICD), where the occurrence of the relevant problem may be expected. Examples of problems in patients with Crohn's disease are shown in Table 1.

We can also use the Problem Classification Scheme for assessing etiopathogenetic factors of Crohn's disease, which include e.g. external environment factors, mental stress and smoking (Lukáš, 2014; Baumgart, 2012), or clinical symptoms of Crohn's disease, which are quite diverse and conditioned by localisation, the disease extent and nature of local inflammatory changes (Zbořil,

Prokopová, 2010). We can also assess symptoms of different forms of the disease (ileitis and ileocolic, perianal, small and large intestine diseases, atypical localisation) as well as occurrence of intestinal and extraintestinal complications (Dítě et al., 2010). Greenstein's classification is recommended for assessment of the development and course of the disease (Zbořil, Prokopová, 2010), while the clinical Crohn's Disease Activity Index (CDAI) or Harvey-Bradshaw Index are recommended for assessment of the disease activity (Freeman, 2008). The Problem Classification Scheme may also be used for assessment of individual symptomatic response and tolerance to drug treatment (using e.g. corticoids, biological treatment, immunosuppressants) or nutritional therapy (Kužela, Zakuciová, 2012). Impartial interpretation of the nutrition condition may be complemented with a scale for approximate nutritional assessment (Mini Nutritional Assessment (MNA)) and Nutritional screening.

Intervention scheme

The Intervention Scheme is a comprehensive classification of activities designed for a specific problem in relation to primary, secondary and tertiary prevention/care. Interventions are intended for a specific problem and they are formulated in the system as targets for four possible categories (Martin, 2005).

The intervention categories Teaching, Guidance and Counseling include the provision of information, predicting client's problems and supporting activities and clients' responsibility for themselves, assistance when taking a decision and solving the problem (Martin, 2005). A nurse gives patients with Crohn's disease information concerning e.g. nutrition, rental of health equipment necessary for enteral nutrition administration, preparation for radio diagnostic, endoscopic or laboratory examinations, post-examination care, monitoring of disease relapses, specificities of the drug treatment, possibilities of maintaining the disease remission by leading a healthy life style, the importance of regular medical care in a gastroenterology office, supportive groups, etc. In case of needs, a nurse educates patients about other possibilities of care provided by homecare agencies, etc.

Table 1 Problem Classification Scheme (Martin, 2005).

Domain	Problem	Signs/Symptoms of Actual
Environmental	Income	low/no income, uninsured medical expenses, difficulty with money management, able to buy only necessities, difficulty buying necessities, other
Psychosocial	Role Change	involuntary role reversal, assumes new role, loses previous role, other
Physiological	Bowel function	abnormal frequency/consistency of stool, painful defecation, decreased bowel sounds, blood in stools, abnormal color, cramping/abdominal discomfort, incontinent of stool, other
Health-Related Behaviors	Nutrition	overweight: adult BMI 25,0 or more, underweight: adult BMI 18,5 or less, lacks established standards for daily caloric/fluid intake, exceeds established standards for daily caloric/fluid intake, unbalanced diet, improper feeding schedule for age, does not follow recommended nutrition plan, unexplained/progressive weight loss, unable to obtain/prepare food, hypoglycemia, hyperglycemia, other

The intervention category concerning Treatments and Procedures contains practical procedures such as biological material sampling, drug administration, etc.

The Case Management category focuses on the coordination of multidisciplinary care. Nutrition care is actually a frequent type of intervention in the area of nutrition in patients with Crohn's disease. According to **Vrzalová et al., (2011)**, nutritional support and education of the ill about dietary measures and possibilities of artificial nutrition is an inseparable part of comprehensive care of a patient with this type of non-specific bowel inflammation. According to **Zbořil (2015)**, a good nutritional condition has positive impact on the overall condition of a patient, who then copes better with possible acute onset of the disease. It is also important in the prevention of disease complication occurrence, when maintaining remission or during the perioperational period.

The last category of interventions – Surveillance includes activities such as detection, measuring, critical analysis, analysis of the condition of an individual, family, community with respect to the given conditions (**Martin, 2005**). When monitoring the disease dynamics, patients are exposed to screening tests. At present, the test that is standard (and the least stressful for patients) is the MR enteroclysis, colonoscopy with subsequent histomorphological assessment of samples. Equally important are esofagogastroduodenoscopy, ultrasound imaging and laboratory diagnostics (**Konečný, Ehrmann, 2014; Zbořil, 2013**). Nursing intervention when monitoring the disease include monitoring of physical signs/symptoms of the disease as well as monitoring of the behavioural component – patients' compliance, their discipline when taking care of themselves, coping abilities and coping with stress or changes in behaviour in connection with the disease. Other nursing interventions concerning nutrition is monitoring of individual patient's tolerance to meals, monitoring of laboratory indicators of the nutrition condition, monitoring of the nutritional screening and fluid balance, etc.

Problem rating scale for outcomes

The Problem Rating Scale for Outcomes of the Omaha System represents a systematic framework designed for measuring (quantification, impartial interpretation) of a client's advancement in relation to the identified specific problem as well as in the efficiency of the planned interventions. It assesses 3 dimensions – knowledge, behaviour and status using the Likert scale with five points (Table 2). The objective of the subscale assessing knowledge is to determine the extent of clients' abilities to understand, remember and interpret the information obtained. The subscale assessing behaviour focuses on the impartial interpretation of clients' reactions or activities.

The objective of the subscale assessing the status is to determine how clients' condition has improved, stabilised or worsened on the basis of subjectively and objectively reported characteristics (signs/symptoms) (**Martin, 2005**). The main indicators for assessment of the status are clinical symptoms, disease activity, laboratory indicators, screening method results, assessment of symptomatic response and treatment tolerance. From the nursing perspective, we can objectively assess data on patients with Crohn's disease by using evaluation tools which are – with respect to the terminological correctness of their translation from the original – used in clinical practice only sporadically (**Vörösová et al., 2015b**).

The objective of this study is to sum up findings on standardised terminology of the Omaha System. The objective of the research is to draw attention to the possibility how the standardised terminology of the Omaha System could be used for the support of public health in a community of patients with Crohn's disease who have a nutrition problem.

MATERIAL AND METHODOLOGY

Sample

The research set consisted of 100 patients with gastroenterological disease, dispensarised in the gastroenterology counselling centre, out of which 42 identified patients (42%) with Crohn's disease had problems with nutrition within nursing assessment. 24 patients were male and 18 patients were female, 14 patients were under 35 years of age, 16 patients were between 36 and 55, 8 patients were between 56 and 65 and 4 patients were over 66 years of age.

Three patients had primary education, 5 patients had vocational education, 23 patients had secondary and 11 patients had tertiary education. More than half of the patients were employed (*n* = 28), others were retired (*n* = 10) or on disability pension (*n* = 4).

Method

Data were collected using the Omaha System (**Martin, 2005**). The research was divided into 3 stages. In the first stage we assessed the problem with nutrition in 42 intentionally selected patients with Crohn's disease.

Assessment was performed using the documentation form of the Omaha System (**Bowles, 2000**) with the consent of its author, Kathryn Bowles from University of Pennsylvania. In the second research stage we chose interventions in nutrition from the Intervention Scheme of the Omaha System: their efficiency was assessed in patients by a nurse/nutritionist during the third research stage when they visited the gastroenterology counselling centre using a Problem Rating Scale for Outcomes.

Table 2 Problem Rating Scale for Outcomes (**Martin, 2005**).

	Knowledge	Behavior	Status
1	No knowledge	Not appropriate behavior	Extreme signs/symptoms
2	Minimal knowledge	Rarely appropriate behavior	Severe signs/symptoms
3	Basic knowledge	Inconsistently appropriate behavior	Moderate signs/symptoms
4	Adequate knowledge	Unusually appropriate behavior	Minimal signs/symptoms
5	Superior knowledge	Consistently appropriate behavior	No signs/symptoms

Research objectives

1. Identifying nutrition problem symptoms in patients with Morbus Crohn according to the Omaha System,
2. Mapping nutrition problem interventions in patients with Morbus Crohn according to the Omaha System,
3. Assessing nutrition problem results in patients with Morbus Crohn according to the Problem Rating Scale for Outcomes of the Omaha System,
4. Finding the statistical differences between the values of initial and final assessment of nutrition and socio-demographic indicators (age, sex, education and job).

The data were collected between June and December 2015.

Statistical analysis

The statistical analysis was performed using the SPSS 22.0 software and its results were analysed using non-parametric comparison tests with significance value 0.05: Wilcoxon signed-rank test, Mann-Whitney U test and Kruskal-Wallis test.

RESULTS AND DISCUSSION

The research results are presented in Tables 3 – 8. Knowledge, behaviour and status were assessed by a nurse from gastroenterology counselling centre / nutritionist using 5 point Likert scale (Table 2) with the interval of several weeks. Between assessment of initial and final knowledge there is a difference ($Z = 5.82, p < 0.001$) with high factual significance ($r = 0.63$). Initial knowledge was assessed as basic (Mdn = 3), while final knowledge as adequate (Mdn = 4). Between behaviour assessment at the admittance and discharge there is a difference ($Z = 4.824, p < 0.001$) with high factual significance ($r = 0.53$). Initial behaviour was assessed as inconsistently appropriate behaviour (Mdn = 3), while final behaviour as usually appropriate (Mdn = 4). Between the assessment of the initial and final status there is a difference ($Z = 5.557, p < 0.001$) with high factual significance ($r = 0.61$). Symptoms of the initial status were moderate (Mdn = 3), while final status symptoms were minimal (Mdn = 4) (Table 3, Table 4).

The difference between initial and final assessment of knowledge, behaviour and status was compared with sex,

age, education and job.

There is no statistically significant difference between knowledge ($U = 181, p > 0.05$) and behaviour ($U = 167, p > 0.05$) assessed at the beginning and at the end after several weeks.

We found statistically significant difference ($U = 88, p < 0.001$) with high factual significance ($r = 0.61$) in the case of the difference of status assessment. Women scored a more significant advance (M rank = 28.61, $n = 18$) in the initial and final assessment of status than men (M rank = 16.17, $n = 24$) (Table 5).

With respect to age groups (categories: 35 years of age, between 36 – 55 years, between 56 – 65 years, over 66 years of age) we found no statistically significant difference in the advance of knowledge assessment ($\chi^2(3) = 2.134, p > 0.05$), in the advance of behaviour ($\chi^2(3) = 0.197, p > 0.05$) as well as in the advance of status ($\chi^2(3) = 6.098, p > 0.05$) when comparing the initial and final assessment (Table 6).

With respect to patient education (categories: primary education, vocational education, secondary education, tertiary education), there was no statistically significant difference in the advance of knowledge ($\chi^2(3) = 0.167, p > 0.05$), behaviour ($\chi^2(3) = 5.776, p > 0.05$) and status ($\chi^2(3) = 4.919, p > 0.05$) when comparing the initial and final assessment (Table 7).

With respect to jobs (categories: employed, retired and disability pension), we found no statistically significant difference between the advance of knowledge ($\chi^2(2) = 4.108, p > 0.05$), behaviour ($\chi^2(2) = 0.253, p > 0.05$) and status ($\chi^2(2) = 5.187, p > 0.05$) when comparing the initial and final assessment (Table 8).

The main objective of the research is to draw attention to the possibility how the standardised terminology of the Omaha System could be used for the support of public health in the specific group of patients with chronic digestive tract disease with a specific problem – nutrition. The relation between diet, etiology and symptoms of non-specific bowel inflammations is discussed in the study by **Rajendran and Kumar (2010)**. The nutrition problem is related to Crohn’s disease, it influences its symptoms (**Yamamoto, 2013**), course and life quality (**Owczarek et al., 2016**). Nutrition problems such as malnutrition (with occurrence in more than 85% patients) and weight loss (affecting over 80% patients) are common. Occurrence of nutrition deficits is also detected partially in relation to anaemia and osteoporosis. They can be caused by radical

Table 3 Description of knowledge, behaviour and status during the initial and final assessment.

	Knowledge Rating		Behaviour Rating		Status Rating	
	Initial	Final	Initial	Final	Initial	Final
Median	3	4	3	4	3	4
Mode	3	4	3	4	3	4
Minimum	2	3	2	3	1	3
Maximum	4	5	4	5	4	5

Table 4 The difference in knowledge, behaviour and status during the initial and final assessment.

	Knowledge	Behaviour	Status
Z	5.82	4.824	5.557
P	0.000	0.000	0.000

Note: Z – statistics, p – significance value.

Table 5 The difference between initial and final assessment of knowledge, behaviour and status with respect to sex.

	Knowledge	Behaviour	Status
U	181	167	88
p	0.283	0.18	0.000

Note: U – Mann-Whitney U test, p – significance value.

dietary restrictions introduced by patients themselves with the intention to mitigate symptoms, or inappropriate nutritional recommendations. Side effects of chronic disease treatment may include iron, calcium, vitamin B12, folic acid, zinc, magnesium or vitamin A deficiency (Owczarek et al., 2016; Donnellan et al., 2013; Basson, 2012). Occurrence of intestinal stenosis may limit patients in eating food containing fibre (Lomer, 2011).

Nutrition is in the Health – Related Behaviors Domain of the Omaha System (Martin, 2005). It is defined as „select, consume, and use food and fluids for energy, maintenance, growth, and health“ (Martin, 2005).

The occurrence of nutrition problem may be expected in connection with gastrointestinal system diseases (Pokorná, Maixnerová, 2013). This problem occurred in 42 patients, mostly in the 36 – 55 years of age category. When identifying nutrition problem symptoms in patients with Morbus Crohn according to the Omaha System, we found unbalanced diet, often linked to individual tolerance or patient’s “fear” of intolerance and possible risk of disease relapse. Alarming symptoms such as unsuitable eating habits or non-observing the recommended diet did not occur at all, which can be regarded as a positive. Most patients had BMI 25 or less. Likelihood of the nutrition problem occurrence may relate to the disease course and development, the disease form or activity or intestinal complication occurrence. With respect to the nutrition problem occurrence, we may conclude it is a topical and specific problem of the community of patients with Crohn’s disease. Assessment of the nutrition condition and consultations with a subsequent nutritional recommendation are thus the basis for the care management concerning these clients (Lomer, 2011; Pokorná and Chudobová, 2011). Identifying the nutrition problem, particularly its symptoms according to the Omaha System, allows for a rational approach when planning specific nutrition recommendations for patients.

When mapping the connection between the nutrition problem and intervention in the area of nutrition in patients with Morbus Crohn according to the Omaha System, the total of 131 interventions have been documented. The documentation tool was the Intervention Scheme of the Omaha System. The highest number of interventions (35%) was documented under the Treatments and Procedures category and related to parenteral and enteral food administration. Enteral nutrition has come to the fore in the recent years, as it allows for food intake in a more natural way. Its stimulation effects on the immune system, intestinal microflora excess reduction and its positive impact on peristalsis have been proved. In comparison with parenteral nutrition, it is easier to administer and is accompanied with lower incidence of complications (Novotná, 2013). Enteral nutrition preparations are defined in nutrition terms, low-osmolar, usually residue-free, lactose-free and do not contain gluten. They are typically administered orally (sipping) as supplement

nutrition with a diet when the food patients eat does not cover their energetic needs. In specific cases enteral nutrition may be administered via a probe (Novotná, 2013). The second most numerous category comprised interventions under the Surveillance category. In the case of respondents with nutrition problems, these concerned particularly monitoring of the signs/symptoms of the nutrition problem, evaluation of the nutrition condition, laboratory indicators and performance of screening tests (e.g. nutrition screening, nutrition risk assessment and the likes, enteral nutrition monitoring, etc.). Each member of the multidisciplinary team, whether it is a nurse, nutritionist or physician nutrition specialist, has an important role. A nurse may draw attention to a nutrition problem on the grounds of medical records, observation, physical examination, nutrition screening or observation of daily food intake and fluid balance. Nutritionists are guarantors of curative nutrition and corresponding patient education doing their work on the basis of diagnoses and in accordance with physician’s instructions. At present, there are nutrition teams providing nutrition care in hospitals. In community care, such a comprehensive approach is not common and our study is one of the first to address the issue in Czech Republic. Diet management was the objective of interventions under the Teaching, Guidance and Counseling category. It is important to emphasise that the composition of a diet for patients with Morbus Crohn is individual, depending on the course of the disease, complication occurrence and pharmacotherapy (Owczarek et al., 2016). A study focused on the review of dietary recommendations by patients themselves points to insufficient sources of relevant information for patients concerning their nutrition and disease and to the need to establish so-called evidence-based dietary guidelines for patients with IBD (Inflammatory Bowel Disease (IBD)) (Hou, Lee, Lewis, 2014). Another study recommends as IBD adjunctive treatment so-called anti-inflammatory diet with limited saccharide intake including consumption of prebiotics, probiotics and modified fatty acids (Olendzki et al., 2014). A strict diet is generally suitable for inducing remission and an individual diet limiting individually harmful substances is suitable for inducing long-term remission (Lee et al., 2015). A review by Shah et al., (2015) presents interesting findings from key studies assessing evidence in the case of most frequent diets currently used in CD treatment. Limited studies of low-fibre diet do not account for the current practice from the perspective of fibre reduction in the active stage of the disease or in stenosis occurrence. A study of high-fibre diet did not evidence benefit in clinical results of active CD. No study describes the use of this diet during the remission stage. There are a low number of studies focusing on vegetarian diets. Only one study (Chiba et al., 2010) evidenced a positive effect as a maintenance treatment of CD, but it contained a small research population (n = 22) and lacked in endoscopic or

Table 6 The difference between initial and final assessment of knowledge, behaviour, and status with respect to age.

	Knowledge	Behaviour	Status
Chi-Square	2.134	0.197	6.098
df	3	3	3
p	0.545	0.978	0.107

Note: df – degrees of freedom, p – significance value.

Table 7 The difference between initial and final assessment of knowledge, behaviour, and status with respect to education category.

	Knowledge	Behaviour	Status
Chi-Square	0.167	5.776	4.919
df	3	3	3
p	0.983	0.123	0.178

Note: df – degrees of freedom, p – significance value.

Table 8 The difference between initial and final evaluation of knowledge, behavior, and status with respect to job.

	Knowledge	Behaviour	Status
Chi-Square	4.108	0.253	5.187
df	2	2	2
p	0.128	0.881	0.075

Note: df – degrees of freedom, p – significance value.

histological findings. In the case of lactose malabsorption during a lactose-free diet it is not necessary to exclude lactose completely, but rather reduce its intake to tolerance level. There are no studies that would assess the lactose effect on IBD activity. Only a limited number of uncontrolled studies points to symptom improvement, but with inconsistent changes in inflammatory markers in specific saccharide diet. Evidence from the perspective of functional symptom reduction exists in so-called Low-FODMAP diet (fermentable oligosaccharides, disaccharides, monosaccharides, and polyols (FODMAP)). Up to now, the effect of gluten reduction diet has not been supported with evidence (Shah et al., 2015). Based on selected interventions in nutrition has changed in the assessed areas (knowledge, behaviour, status) in all patients.

The last research objective was to find any statistical differences between the values of initial and final nutrition problem assessment and socio-demographic indicators (age, sex, education and job). The values measured at the initial nutrition assessment concerning knowledge, behaviour and especially status were low, which indicated the occurrence of a topical problem that required high priority solution. Subscale for status assessment evidenced severe nutrition problem signs/symptoms especially in women. Average values of the nutrition problem results at the initial assessment of behaviour scored lower values than in men. Knowledge of both sexes was assessed as “basic”.

The final assessment of nutrition results confirms that implementation of selected interventions from the Intervention Scheme of the Omaha System reduced the problem. When assessing the status, we identified minimal signs/symptoms in respect of disease chronicity in both sexes that required above all observance of the treatment regimen (e.g. dietotherapy). Adequate knowledge and usually appropriate behaviour are a significant factor of

relapse prevention and remission maintenance. When comparing the initial and final nutrition problem assessment with socio-demographic indicators we found a statistically significant difference with high factual significance only in the case of comparing the status when women scored a greater advance between the initial and final status assessment than men (p = 0.000). With respect to age groups, education and jobs, no statistically significant differences were found. Taking into account this finding, we recommend this to be verified on a larger respondent population.

The Problem Rating Scale for Outcomes may be used for monitoring client’s progress, assessment of nutrition care efficiency or when determining if there is a need to make changes in nutrition or other aspects of care.

CONCLUSION

Assessment of the nutrition condition together with subsequent nutritional recommendation is the basis of patient care management of Crohn’s disease. Identification of the nutrition problem and its symptoms according to the Omaha Systems allows for rational approach in planning specific nutrition recommendations. According to the Omaha System, interventions in the field of nutrition are linked to enteral and parenteral nutrition administration, monitoring of the nutrition condition and to education, management and consultancy during the diet that is individual and dependent on various factors. When assessing the efficiency of selected interventions using a Problem Rating Scale for Outcomes the nutrition problem was considerably reduced. When comparing the initial and final nutrition problem assessment with socio-demographic indicators, we found a statistically significant difference with high factual significance only in the case of difference between the status assessment, when women scored a greater advance between the initial and final status assessment than men. In respect of age groups,

education and jobs, no statistically significant differences were found, in all patients there is a shift between initial and final assessment of knowledge, behaviour and status.

REFERENCES

- Basson, A. 2012. Nutrition management in the adult patient with Crohn's disease. *South African Journal of Clinical Nutrition*, vol. 25, no. 4, p. 164-172. <http://dx.doi.org/10.1080/16070658.2012.11734423>
- Baumgart, D. C. 2012. *Crohn's Disease and Ulcerative Colitis. From Epidemiology and Immunology to a Rational Diagnostic and Therapeutic Approach*. New York, USA : Springer. 754 p. ISBN-13:978-1461409977. <http://dx.doi.org/10.1007/978-1-4614-0998-4>
- Boledovičová, M., Zrubcová, D. et al. 2009. *Sestra a pôrodná asistentka v komunitnej starostlivosti*. Nitra, Slovakia : FSVaZ UKF. 400 p. ISBN: 978-80-8094-576-3.
- Bowles, K. H. 2000. Patient Problems and Nurse Interventions during Acute Care and Discharge Planning. *Journal of Cardiovascular Nursing*, vol. 14, no 3, p. 29-41. <http://dx.doi.org/10.1097/00005082-200004000-00006> PMID:10756472
- Ditě, P. et al. 2007. *Vnitřní lékařství*. 2nd ed. Praha : Galén. 586 p. ISBN: 80-7262-496-6. PMID:PMC2222980
- Ditě, P., Lukáš, M., Lata, J. 2010. Idiopatické střevní záněty. In Česka, R. et al. *Interna*. Praha : Triton, p. 400-404. ISBN: 978-80-7387-629-6.
- Donnellan, C. F., Yann, L. H., Lal, S. 2013. Nutritional management of Crohn's disease. *Therapeutic Advances in Gastroenterology*, vol. 6, no. 3, p. 231-242. <http://dx.doi.org/10.1177/1756283X13477715>
- Freeman, H. J. 2008. Use of the Crohn's disease activity index in clinical trials of biological agents. *World Journal of Gastroenterology*, vol. 14, no. 26, p. 4127-4130. <http://dx.doi.org/10.3748/wjg.14.4127>
- Hou, J. K., Lee, D., Lewis, J. 2014. Diet and inflammatory bowel disease: review of patient – targeted recommendations. *Clinical Gastroenterology and Hepatology*, vol. 12, no. 10, p. 1592-600. <http://dx.doi.org/10.1016/j.cgh.2013.09.063>
- Chiba, M., Abe T., Tsuda, H., Sugawara, T., Tsuda, S., Tozawa, H., Fujiwara, K., Imai, H. 2010. Lifestyle – related disease in Crohn's disease: relapse prevention by a semi-vegetarian diet. *World Journal of Gastroenterology*, vol. 16, no. 20, p. 2484-2495. <http://dx.doi.org/10.3748/wjg.v16.i20.2484> PMID:20503448
- Konečný, M., Ehrmann, J. 2014. Pokroky v diagnostice a léčbě nespecifických střevních zánětů. *Vnitřní Lékařství*, vol. 60, no. 7-8, p. 625-629. PMID:25130640
- Kuželka, L., Zakuciová, M. 2012. Racionálna liečba chronických nešpecifických zápalov čreva. Štandardný diagnostický a terapeutický postup. *Metodický list racionálnej farmakoterapie a liekovej politiky MZ SR*, vol. 15, no. 5-7, p. 2-8.
- Lee, D., Albenberg, L., Compher, C., Baldassano, C., Baldassano, R., Piccoli, D., Lewis, J. D., Wu, G. D. 2015. Diet in the pathogenesis and treatment of inflammatory bowel disease. *Gastroenterology*, vol. 148, no. 6, p. 1087-106. <http://dx.doi.org/10.1053/j.gastro.2015.01.007> PMID:25597840
- Lukáš, M. 2014. Etiologie a patogeneze idiopatických střevních zánětů. *Vnitřní Lékařství*, vol. 60, no 7-8, p. 640-644. PMID:25130643
- Lomer, M. C. 2011. Dietary and Nutritional considerations for inflammatory bowel disease. *Proceedings of Nutrition Society*, vol. 70, no. 3, p. 329-35. <http://dx.doi.org/10.1017/S0029665111000097>
- Martin, K. S. et al. 2005. *The Omaha System. A Key to Practice, Documentation, and Information Management*. St. 2nd ed. St. Louis : Elsevier. 457 p. ISBN 978-0-7216-0130-4.
- Novotná, H. 2013. Podávání enterální výživy – péče o pacienta. In Holubová, A., Novotná, H., Marečková, J. *Ošetrovatelská péče v gastroenterologii a hepatologii*. Praha : Mladá fronta, p. 193-201. ISBN: 978-80-204-2806-6.
- Olendzki, B. C., Silverstein, T. D., Persuitt, G. M., Ma, Y., Baldwin, K. R., Cave, D. 2014. An anti-inflammatory diet as treatment for inflammatory bowel disease: a case series report. *Nutrition Journal*, vol. 13, no. 5. <http://dx.doi.org/10.1186/1475-2891-13-5>
- Owczarek, D., Rodacki, T., Domagala-Rodacka, R., Cibor, D., Mach, T. 2016. Diet and nutritional factors in inflammatory bowel disease. *World Journal of Gastroenterology*, vol. 22, no. 3, p. 895-905. <http://dx.doi.org/10.3748/wjg.v22.i3.895> PMID:26811635
- Pokorná, A., Maixnerová, L. 2013. Sledování nutričního stavu seniorů za hospitalizace. *Prakt. Lékařství*, vol. 93, no. 5, p. 221-225.
- Pokorná, A., Chudobová, L. 2011. Effectiveness of the Standardised Nutritional Support of Senior Citizens in the Institutional Care. *Journal of US-China Medical Science*, vol. 8, no. 9, p. 567-570.
- Rajendran, N., Kumar, D. 2010. Role of diet in the management of inflammatory bowel disease. *World Journal of Gastroenterology*, vol. 16, no. 12, p. 1442-1448. <http://dx.doi.org/10.3748/wjg.v16.i12.1442> PMID:20333783
- Shah, N. D., Parian, A. M., Mullin, G. E., Limketkai, B. N. 2015. Oral diets and nutrition support for inflammatory bowel disease: what is the evidence? *Nutrition in Clinical Practice*, vol. 30, no. 4, p. 462-473. <http://dx.doi.org/10.1177/0884533615591059> PMID:26084506
- Sikorová, L. 2012. *Dětská sestra v primární a komunitní péči*. 1st ed. Praha : Grada Publishing. 184 p. ISBN: 978-80-247-3592-4.
- The Omaha System, 2009. Solving the Clinical Data-Information Puzzle [online] [cit.2014-07-22] Available at: <http://www.omahasystem.org/>
- Von Krogh, G., Dale, C., Näden, D. 2005. Framework for Integrating NANDA, NIC, and NOC Terminology in Electronic Patient Records. *Journal of Nursing Scholarship*, vol. 37, no. 3, p. 275-281. <http://dx.doi.org/10.1111/j.1547-5069.2005.00047.x> PMID:16235870
- Vörösová, G. et al. 2007. *Klasifikačné systémy a štandardizácia terminológie v ošetrovatel'stve*. 1st ed. Martin : Osveta. 112 p. ISBN 978-80-8063-242-7.
- Vörösová, G., Solgajová, A., Archalousová, A. 2015a. *Štandardizovaná terminológia pro ošetrovatelskou diagnózu*. 1st ed. Praha : Grada Publishing. 144 p. ISBN: 978-80-247-5304-1.
- Vörösová, G., Solgajová, A., Archalousová, A. 2015b. *Ošetrovatelská diagnostika v práci sestry*. 1st ed. Praha : Grada Publishing. 208 p. ISBN: 978-80-247-5538-0.
- Vrzalová, D., Konečný, M., Ehrmann, J. 2011. Enterální a parenterální výživa u pacientů s nespecifickými střevními záněty. *Medicina pro Praxi*, vol. 8, no. 7-8, p. 337-338.
- Yamamoto, T. 2013. Nutrition and diet in inflammatory bowel disease. *Current Opinion in Gastroenterology*, vol. 29, no. 2, p. 216-21. <http://dx.doi.org/10.1097/MOG.0b013e32835b9a40>

Zbořil, V., Prokopová, L. 2010. Idiopatické střevní záněty – Crohnova nemoc. In Bureš, J., Vaňásek, T. et al. *Gastroenterologie*. Praha : Galén, p. 99-102. ISBN: 978-80-7262-692-2.

Zbořil, V. 2013. Endoskopické metody v racionální diagnostice a terapii idiopatických střevních zánětů. *Časopis lékařů českých*, vol. 152, no 6, p. 280-283.

Zbořil, V. 2015. Nutriční postupy [online] 2015-01-23. [cit. 2015-02-01] Available at:

<http://www.crohnovanemoc.cz/zakladni-lecebne-metody/nutricni-postupy/dieta.html>

Acknowledgments:

We would like to thank Karen S. Martin for possibility to use the Omaha System in nutrition in patients with Crohn's disease, as well as Kathryn H. Bowles for her permission with using the documentation form of the Omaha System in this study.

Contact address:

Eva Beňová, University of South Bohemia in České Budějovice, Faculty of Health and Social Studies, Department of Nursing and Midwifery, Higher School of Health and Middle School of Health, Palachova 35, 400 01 Ústí nad Labem, Czech Republic, E-mail: ezuzakova@yahoo.com.

Mária Boledovičová, University of South Bohemia in České Budějovice, Faculty of Health and Social Studies, Department of Nursing and Midwifery, U Výstaviště 26, 370 05 České Budějovice, Czech Republic, E-mail: boledovicova.maria@gmail.com.

Erika Krištofová, Constantine The Philosopher University in Nitra, Faculty of Social Sciences and Health Care, Department of Nursing, Kraskova 1, 949 01 Nitra Slovak Republic, E-mail: ekristofova@ukf.sk.

Luboslava Pavelová, Constantine The Philosopher University in Nitra, Faculty of Social Sciences and Health Care, Department of Nursing, Kraskova 1, 949 01 Nitra Slovak Republic, E-mail: lpavelova2@ukf.sk.