HEALTH, HEALTH-RELATED BEHAVIOR AND QUALITY OF LIFE OF MIDDLE AND OLD-AGED WOMEN IN HUNGARY

Summary of Ph.D. Thesis

Ágnes Maróti-Nagy M.D.

Department of Public Health

Faculty of Medicine, University of Szeged

2011

HEALTH, HEALTH-RELATED BEHAVIOR AND QUALITY OF LIFE OF MIDDLE AND OLD-AGED WOMEN IN HUNGARY

Summary of Ph.D. Thesis

Ágnes Maróti-Nagy M.D.

Department of Public Health

Faculty of Medicine, University of Szeged

2011

Introduction

Nowadays, in the 21st century, specialists are facing new challenges in the field of medical attendance. After the successful management of infectious diseases, non-communicable diseases became the main problems of healthcare in the developed countries. Beside genetics, and environmental effects, the most important risk factors of these statements are derived from poor lifestyle (diet, lack of exercise, alcohol and tobacco use, etc.).

Although women's life expectancy at birth is increasing throughout the world, in Hungary the values of it are behind most of those other developed countries of the European Union (EU). The highest proportion of overall mortality rate of Hungarian women in 2008 was caused by two non-communicable diseases, such as cardiovascular diseases (55.4%) and malignant tumors (22.8%).

Regarding malignant tumors, breast cancer have caused women's most deaths until 2002, even though a population based screening program has been implemented in Hungary since the January of 2002. In 2008 the lung cancer exceeded the mortality rate of breast cancer. Breast cancer is a type of cancer which can be cured in case of early detection and through that longevity can be achieved. Other types of cancers affecting only women (e.g. cervix, endometrial, other parts of uterus, ovary, etc.) were responsible for 5.7% of the overall deaths of women in the year 2008. Most of these tumors have risk factors correlating with lifestyle, mainly diet, alcohol consumption, smoking and lack of physical activity. Beyond breast cancer, also cervix cancer can be screened and early detected through an organized, nationwide screening program in Hungary, which has been operating since the September of 2003.

Hungarian people care little about their health, most of them do little exercise, their nutrition is unhealthy, the prevalence of smoking and the consumption of alcohol are high, and their health behavior needs improvement. Most of them visit their physician in case of advanced diseases involving malignant tumors, too, which may affect their quality of life (QOL) negatively. Other type of diseases which may affect women's QOL – mainly in case of fractures – is osteoporosis. In Hungary and also all over the world it is a type of non-communicable diseases, which causes a great problem to health care systems through its prevalence and consequences (e.g. fractures in vertebrae, femur). Nowadays, in Hungary the proportion of women diagnosed with osteoporosis is about 6% of female population.

After menopause the loss of the bone mineral substance is accelerated. Sometimes it does not cause any symptoms; in other cases pain may occur. With appropriate lifestyle in the childhood and young ages, the peak bone mass can be increased. Lifestyle factors such as diet (calcium and vitamin D intake),

1

no coffee consumption, non-smoking, and moderate or vigorous physical activity are associated with the development of the desirable bone mass. This is a „preventable" disease that means, living a healthy lifestyle (as mentioned above), the occurrence of osteoporosis may be decreased or delayed.

Osteoporosis and breast/gynecological cancers are public health important non-communicable diseases, but there is a huge difference in their seriousness and surviving aspects. In osteoporosis long survival can be achieved even in case of having no fractures, in spite of breast/gynecological cancers, where the outcome is strongly correlated with the stage of the tumor at the time of diagnosis. Cancers are life-threatening diseases; living with this disease is more uncertain and life expectancy is worse in many cases. These kinds of facts may affect women's intention for changing their lifestyle in a healthier direction for faster recovering.

The overall aim of our study was to examine Hungarian women's health, health behavior and QOL, who are suffering from public health important non-communicable diseases (breast/gynecological cancers and osteoporosis), which affect them in the middle- and old-age.

The main aim can be achieved by analyzing the socio-demographic, and health status parameters (e.g. body mass index, presence of chronic disease, regular medication) of the women and revealing the relationship between these data. Also the changes in lifestyle should have been analyzed and identification of the factors was needed that were associated with making the women to alter their lifestyle (diet, exercise, smoking, etc.). Designation of the factors that were associated with better QOL was also an important way of finding the line of sight for middle- and old-aged women to improve their health.

Our working hypotheses were:
1. the type of the examined disease (osteoporosis or malignant tumor) affects women intention for lifestyle change; women with malignant tumor as a life-threatening disease are likely to change all aspects of their lifestyle, than women with osteoporosis;
2. socio-demographic factors (age, education, urbanization, marital status, etc.), presence of other chronic diseases, and counseling from medical staff affect women intention to change their lifestyle in osteoporosis and malignant tumor;
3. both of the analyzed diseases affects women's QOL in negative direction, and women with malignant tumor have lower QOL scores.

Materials and methods

The study was carried out in two groups of patients: in women with osteoporosis and in women with malignant tumors. The collection of the different groups' data was performed at different times. The description of study design and sample is separated along this grouping.

Osteoporosis: An interviewer-administered questionnaire-based cross sectional study was performed in 2007. The survey was carried out in the outpatient Bone Densitometry Centre of Szeged, among women over 40 years, who were referred to the Centre by general practitioners and by specialists (gynecologists, rheumatologists, orthopedic surgeons, endocrinologists, etc.). Within the study period, all eligible women were offered the questionnaire by the medical staff. Women were asked to read a written description about the aims of the study, and we asked them to volunteer as anonymous participants in our study. An informed consent was signed by those who agreed to participation.

The enrolment of 500 patients was planned. Altogether 424 women (84.8%) completed the questionnaire. After sorting the questionnaires, the total number of the sample was reduced by 20 persons because of incomplete filling-in (important demographical data, e.g. age or education, were missing). Another 45 persons were excluded because of the pre-menopausal status of the women (postmenopausal status was defined as a period in the last 12 months without any menses). We evaluated the data of the remaining 359 women, thus the total response rate was 71.8%.

Malignant tumors: A self-administered questionnaire-based, cross-sectional study was performed between December 2008 and February 2009 by the Department of Public Health in cooperation with the Department of Oncotherapy, Faculty of Medicine, University of Szeged, Hungary.

In this study, 201 volunteer, randomly selected patients, treated for cancer at the Department of Oncotherapy were involved. The participants originated from the population of the city of Szeged and its region. The total number of the sample was reduced by 39 because these women were not treated for gynecological or breast cancer and by further 7 cases because of the missing demographic and health status data. We evaluated the data of the remaining 155 women (77.1%).

To interview selected patients, two kinds of tools were used according to their selection criteria (osteoporosis, breast/gynecological cancer). Each of them consisted of the WHOQOL-BREF and a self-developed questionnaire.

WHOQOL-BREF involved two global items (questions): one about overall QOL and another about general health and also contained four domains of QOL, such as physical (7 items), psychological (6 items), social (3 items)

and environmental (8 items) domain. The answers of each question were graded from 1 to 5. The mean scores of each domain were calculated according to the original model of the WHO. Higher QOL scores meant better QOL. Self-developed questionnaire contained questions about socio-demographic data, general health status, health-related behaviors (coffee, alcohol, diet, smoking, and exercise), and health care.

Data processing was carried out using SPSS 15.0 for Windows. In case of continuous variables the mean, the standard deviation and the range were calculated. Distribution was calculated in categorical data, and the χ^2 test was used to compare different groups (e.g. consuming milk, vitamin D and calcium in women with different BMD groups; dietary change according to demographic data and advice for lifestyle change). One-way ANOVA was used to compare the means of the QOL domains in different groups. Joint analysis of factors influencing the dietary change of women with malignant tumors was modeled by logistic regression. Logistic regression describes the relationship between one categorical dependent variable and several categorical or continuous independent variables. In our research the dietary change of women with malignant tumors was the categorical dependent variable. Age group, education, type of tumor, advice for lifestyle change from physician, advice for lifestyle change from any other medical staff were the categorical independent variables.

Results

The mean age of BMD-measured women was 64±8.24 years (min: 46, max: 88) and the mean age at menopause was 48.37±5.90 years. The mean age of women with osteoporosis was 66.21±8.28 (min: 51, max: 88). These data were by the tumor-treated women 57.6±11.83 years (min:18 max:85), the mean age at menarche was 13.56±1.52 years.

Analyzing women with osteoporosis 35.7% of them had spontaneous fracture after the age 45. In the highest proportion (18.7%) they had forearm fractures and in 6.4% they had vertebra fractures. About one-fourth of them had familiar anamnesis of osteoporosis, as their mothers had spontaneous fractures after the age 45.

To treat the osteoporosis, about 90% of the women were advised to take medication. A half of them were treated by bisphosphonates, only 5.8% of them got SERM (selective oestrogen receptor modulator) products. D-vitamin was used by 73.7% and calcium supplementation by 66.7% of them. Alternative therapy use has been occurred in 37.5% of the respondents.

4

The effect of demographic factors and some health status indicators on WHOQOL-BREF QOL domain scores in women with osteoporosis were analyzed: education and to be an active worker were the factors which have resulted in their subgroups QOL significant differences regarding the most domains. The effects of some socio-demographic and health status parameters on the feasibility of choosing 'good QOL' were also analyzed in all domains. The analyzed factors were: age, education, marital status, type of settlement, to be an active worker, previous fracture, having any chronic disease. Women with higher education (p<0.01, OR:3.85, CI:1.45-10.19) choose this answer about four times more likely, than lower-educated women, active worker women (p<0.05, OR:5.12, CI:1.10-23.79) about five times more likely, than non-active women, older (above 65 years) women (p<0.01, OR:3.11, CI:1.27-7.62) and women in partnership (p<0.01, OR:3.42, CI:1.42-8.26) about three times more likely, than younger and single women.

Analyzing the general question about 'good QOL' it was shown that women who had no fractures in their anamnesis chose about two times more likely (p=0.046, OR: 1.99, CI: 1.01-3.91) the answer of 'good QOL', than women with fractures. This was the only affecting factor among the investigated socio-demographic and health status parameters.

By the question about general health the two affecting factors were education and age group. Comparing women with elementary qualification to women with high education it has been revealed that in the latter group it was more than five times more likely (p=0.003, OR: 5.51, CI: 1.805-16.824) choosing the answer 'good health'. Also age group had effect: women over the age 65 (which is in Hungary the retiring age by mostly women) almost three times more often (p=0.016, OR: 2.61, CI: 1.19-5.70) chose 'good health' answer, than younger women.

Women with osteoporosis smoked in average 14 cigarettes per day for about 30 years. Previous smokers left cigarette in average for 15-17 years. About three-fourth of them drank coffee regularly, the mean amount of the consumed coffee per day was 1.61±0.67dL in the group osteoporosis. In the highest proportion these women drank wine, almost one-third of them, the consuming of hard drinks occurred in 4.2% of them. The mean amount of the consumed alcohol per serving, measured in units was 1.19±0.63. Daily consuming of milk and dairy products in childhood was 73.4% in the group osteoporosis. Analyzing the recent consumption this proportion did not change significantly. After the diagnosis of osteoporosis 52.7% of the women changed their diet. One-third of them ate more dairy products and drank more milk, 14.6% of them consumed more raw fruits and vegetables and 7.0% of them ate less fatty foods.

The relationship between the change in dietary habits and some demographic factors (age, education, activity in work, and type of settlement), previous fractures, and medical staff's advice was analyzed by using binary logistic regression analysis. The only affecting factor by women with osteoporosis was medical staff's advice (p<0.001, OR: 4.07, CI: 2.04-8.11). Women who were advised for lifestyle change changed their diet about four times more likely than women who were not advised. Counseling was given from general practitioners (GPs), gynecologists and rheumatologists in the same proportion. Women with osteoporosis were advised for lifestyle change in the highest proportion by rheumatologists (36.6%) and GPs (23.2%).

The greatest part (34.8%) of the tumor-treated sample was formed by women treated with breast cancer. Cervix cancer occurred in 22.6%, malignant tumors of the other parts of the uterus in 23.1%, ovarian cancer in 15.4%, and vaginal cancer in 1.5%. Both the genital organs and the breast were affected in 2.5%.

Women approximately in the same proportion (~85%) visited mammography and cervix screening. The reason for visiting a doctor was having complaints in three-fourth of the women, 7.1% of them had a need for general check-up and 14.2% of them attended cancer screening. At the time of the survey 84.2% of the women underwent treatment; about 35% of them were treated for years and also the same proportion were treated for months.

The effect of some demographic factors and health status indicators influencing QOL in women with tumors were analyzed. Regarding tumor-treated women the most QOL-affecting factor was the presence of any other chronic disease. It caused huge differences in the QOL of these women in the physical and psychological domains. The social domain was also significantly affected by age group and tumor type. Being an active worker meant significantly better QOL in the physical domain.

Overall QOL and general health were analyzed to assess the factors increasing the odds of having good QOL and the odds of high-graded health by women treated with malignant tumor. Binary logistic regression model was performed, and the same demographic and health status variables were used, which were analyzed above. These parameters have been proven influencing neither by the overall QOL nor by the general health.

Also each of the four domains was analyzed to show the factors that were associated with better QOL. Only two variables have proven to be influencing and only in two domains. By the psychological domain were the type of tumor and the marital status effective: to have gynecological cancer meant almost four times odds to have better QOL (p=0.003, OR: 3.71, CI: 1.55-.8.91); to live in partnership meant about three times odds to have better QOL (p=0.008, OR: 3.31, CI: 1.37-7.99). In the environmental domain the type of tumor was

6

resulted in better QOL: women who had gynecological cancer had almost three times the odds of having good QOL, than women with breast cancer (p=0.048, OR: 2.85, CI: 1.01-8.08).

We analyzed the effects of the different treating ways of cancer to the QOL of women. Four treatments were investigated: surgical operation, radiotherapy, chemotherapy and psychotherapy. Surgical operation had significant effects in the social (p=0.005) and environmental (p=0.030) domains: women who were treated this way had higher scores. Radiotherapy had significant effects in the social domain (p=0.034): women who were not getting radiation therapy had higher scores of QOL. There were no significant differences between the four domain scores of women depending on the treatment with chemotherapy. Psychotherapy had the most effects: in the psychological (p=0.001), social (p<0.001) and environmental (p=0.060) domains: women who were partaken this kind of treatment had significantly lower QOL scores comparing them to women who were not partaken.

Using binary logistic regression model to define which therapy contributes to women choosing better QOL, psychotherapy and surgical operation had effects. The former by the psychological (p=0.017, OR: 3.43, CI: 1.25-9.42) and social domains (p=0.008, OR: 4.03, CI: 1.43-11.37); the latter by the environmental domain (p=0.036, OR: 2.781, CI: 1.06-7.23).

Before the diagnosis two-fifth of the women smoked cigarettes, which proportion decreased to its half after the diagnosis of the tumor. Also the mean number of the smoked cigarettes showed decreasing tendency.

Women treated with malignant tumor drank coffee every day in 86.5% before the diagnosis; almost one-tenth of them consumed coffee not at all. The mean amount of the consumed beverage was 0.76±0.48dL (min: 0.5; max: 3dL) before the diagnosis of the tumor. After the diagnosis the proportion of the every day-drinking women decreased (73.5%) and the coffee non-drinkers' proportion increased (20.6%). Although the mean amount of the consumed coffee did not change significantly (0.73±0.46dL). Before the tumor diagnosis 38.7% of the interviewed women consumed alcohol and 2.6% of them drank every day. The mean amount of the consumed alcohol per serving and measured in units was 2.36±2.28. After the diagnosis the proportion of the non-drinkers increased (60.6%), although more women drank every day (4.5%). The mean amount of the consumed alcohol measured in units was 2.08±2.29. After the diagnosis of the malignant tumor 78.7% of the women changed their nutrition. Also the same proportion mentioned to eat more raw vegetables and fruits. About one-third of the women ate more fiber rich foods and the same proportion ate less fatty foods. The white bread, red meat, smoked meat, milk and sweet consumption significantly decreased after the diagnosis of tumor, while the whole wheat bread, fish in oil, raw fruit, raw vegetable, braised

7

vegetables, vegetable-dish and oily seeds consumption significantly increased after the diagnosis of tumor.

The relationship between the change in dietary habit and some demographic factors (age, education, activity in work, and type of settlement), type of the malignant tumor, and medical staff's advice was analyzed by using binary logistic regression analysis. Three out of six variables – medical staff's advice, type of the tumor and active work – fitted the best the model. The strongest variable was the medical staff's advice (OR: 6.05). Women who got advice for lifestyle changes were 6.05 times more likely to change their nutrition compared to those who did not get any advice. The second factor influencing dietary changes was the type of the cancer. Patients with breast cancer changed 3.36 more likely (OR: 3.36) their dietary habits than patients with gynecological cancer. Thirdly, women who were not active workers changed their eating habits 2.70 more likely (OR: 2.70) than active working women.

Women treated with tumor were advised to change their lifestyle in the highest proportion by their therapist and their GPs (46.5%), and this kind of information was given to them by other medical staff in 23.9%. After the diagnosis of tumor 79.2% of them changed their diet and 52.3% of them had changed something in her physical activity - 23.5% did more exercise, while 28.8% of them did less exercise.

Discussion

The aim of our study was to examine Hungarian women's health, health-related behavior and QOL, who are suffering from breast/gynecological cancers or osteoporosis, which diseases affect them in the middle- and old-age. We have analyzed their socio-demographic, and health status parameters (e.g. body mass index, presence of chronic disease, regular medication), their lifestyle and lifestyle change, QOL and the factors that were associated with their better QOL.

Most of the sampled women were secondary school educated, live in partnership, in towns and were non-workers. Women with malignant tumors were in higher proportion obese and also took medication in higher rate. The frequency of chronic diseases was similar in the two groups. Smoking, consuming coffee and hard drinks and also the dietary change was more specific to women with tumor. The main motivating factor for lifestyle change was getting advice from the medical staff.

Regarding QOL all the scores of the tumor-treated women were higher than that of with osteoporosis. Age, being an active worker and having any

chronic disease were significant factors in affecting QOL in women with tumor. Education and being an active worker resulted in significantly higher QOL scores in women with osteoporosis. To choose 'good' QOL was more likely in higher-educated, active-worker women, in women living with partner, and in women not treated with psychotherapy.

At the time of diagnosis the smoking rate and the number of smoked cigarettes among osteoporotic women was higher. After the diagnosis in women with cancer the smoking rate has fallen with 50%, and also the number of smoked cigarettes decreased. The proportion of coffee consumers was less in group osteoporosis before diagnosis. After the diagnosis, the every-day coffee drinkers' rate decreased among women with tumor, although the amount of coffee per serving did not change. Before the diagnosis, the every-day alcohol consumption was equal in the two groups, and the mean amount of alcohol per serving was about half the amount of tumor-treated women in women with osteoporosis. After the diagnosis, in cancer-treated women, the number of non-drinkers increased about one-fifth proportion, and the mean amount of consumed alcohol per serving decreased. Analyzing diet, tumor-treated women changed something in 25% higher proportion, the ratio of more raw fruit and vegetable consumption was five-and-a-half-fold higher by them as in osteoporotic women. Among women with cancer the rate of less fatty food consumers was fivefold higher, than in osteoporotic women. Changing physical activity was there about the same proportion in the two groups.

On the whole it can be stated that women with tumor as a life-threatening disease changed there lifestyle in higher proportion and in higher degree comparing them to women with osteoporosis.

It is worth mentioning the role of the medical staff (mainly therapists and GPs) in making osteoporotic and tumor-treated women to alter their lifestyles. We have analyzed the factors that have been contributed to the dietary change. The main and most effective factor of dietary change was getting advice from the medical staff. It was the most significant factor in both of the groups and the only affecting factor by women with osteoporosis. In women with tumor information about cancer and proposed lifestyle variation were given to patients by therapists in the highest proportion, and in higher rate than in other study findings.

Women were informed in the highest proportion by their therapists, and well-informed patients altered their lifestyles in significantly higher proportion. This result attracts the attention to the effective co-operation of the preventive and clinical care and refers to the significant role of the tailor-made intervention.

Analyzing women's lifestyle change with different socio-demographic characteristics, there were no differences in osteoporotic women's changing according to their demographic characteristics.

However in cancer-treated women there were some significant differences according to their age education and marital status. Younger women changed their physical activity in higher proportion. They were in better physical condition with less other diseases which facts contributed to their more positive changes. Women who were higher qualified changed their lifestyle in significantly higher proportion. Women with higher education claimed about reading more information about lifestyle change in cancer from handouts and media than women with lower education. Also more of them reported being informed by any medical staff or by other cancer-treated patient about lifestyle change in case of having malignant tumor. Furthermore, well-educated women generally had more theoretical knowledge about healthy living and diet, which could be a reason of their conscious altering. Cancer-treated subjects who were living with a partner changed in significantly higher proportion, which fact contributes to the important role of social support in patients facing with cancer.

Conclusions

Our first hypothesis has worked; the extent of changing lifestyle has differed in the two patient groups. Women with tumor as a life-threatening disease have changed there lifestyle in higher proportion, in higher degree, and in more aspects of their health-related behavior comparing them to women with osteoporosis, this refers to the different effect of the different diseases.

Our second working hypothesis has worked in part: while type of settlement and having any other chronic disease have not played any role in lifestyle change, age, education and marital status caused differences in lifestyle changing and only in tumor-treated women. The main driver of the lifestyle change was the medical staff's advice, which fact draws attention to the responsibility of workers of the primary care during treatment and prevention. On the whole we can say that women treated with tumor have changed their health behavior in higher proportion, in higher degree and in more aspects of their life. This could be related to the life-threatening feature of their disease and to the fear deriving from this, which stimulates and motivates changing, so the role of general practitioners in giving them advice is more important.

Our third working hypothesis was that all women with breast cancer had lower QOL scores. This has not worked: regarding QOL all the scores of the

tumor-treated women were higher than that of with osteoporosis. According to our results age, education, to be an active worker, and having no other chronic disease and in some cases marital status were the factors that affected QOL. The average age of women with osteoporosis was eight years higher; the proportion of women living with a partner was equal in the two groups. Education have played significant role in modulating QOL, higher qualification have meant higher QOL scores: among osteoporotic women the proportion of low-educated women was higher. Having other chronic diseases was there in similar proportion in the two groups. The main difference regarding these women was in the proportion of active workers: women with tumor have worked more than two times more. Also having fractures and pain have caused decreasing in the QOL scores, which fact occurred mostly in women with osteoporosis. These variables can explain the differences in the QOL of the two groups.

In conclusion it can be stated that women with osteoporosis were older, lower-educated; women with tumor had higher BMI scores, the proportion of active workers, smokers and coffee-drinkers was also higher among them. In the two groups the ratio of partner-living, urbanized women was equal, consuming alcohol was there also in same proportion, and also the ratio a having chronic diseases.

Women treated with tumor has changed mainly their diet, osteoporotic women has changed more their physical activity. QOL has been affected in women with osteoporosis by age, education, to be an active worker, having fractures, and a positive correlation has occurred regarding marital status (living in partnership). In tumor-treated women older age, being an active worker, having no other chronic disease, living with a partner and no regular medication were in coherency with better QOL. Comparing the two groups, tumor-treated women had higher QOL scores.

ACKNOWLEDGEMENTS

LIST OF PUBLICATIONS

Publications related to the Thesis

1. Paulik Edit, **Nagy Ágnes**: A háziorvos szerepe az osteoporosis megelőzésében és kezelésében. *Medicus Universalis* 2008;41(1):27-30.

2. **Nagy Ágnes**, Paulik Edit: Az életmód és az osteoporosis kapcsolata közép- és időskorú nők körében. *Egészségfejlesztés* 2009;50(3):8-13.

3. **Maróti-Nagy Ágnes**, Paulik Edit, Thurzó László: Az egészségügyi személyzet életmód-tanácsadó tevékenységének szerepe daganatos betegséggel kezelt nők táplálkozási szokásainak megváltoztatásában. *Magyar Onkológia* 2010;54:41-45. doi:10.1556/MOnkol.54.2010.1.6

4. **Maróti-Nagy, Ágnes**, Paulik, Edit: Factors influencing quality of life of Hungarian postmenopausal women screened by osteodensitometry. *International Journal of Rehabilitation Research* 2011;34(1):73-78. *IF: 1,192*

Abstracts related to the Thesis

1. **Nagy Ágnes**, Paulik Edit: Az életmód és az osteoporosis kapcsolata közép- és időskorú nők körében. Magyar Higiénikusok Társasága XXXVII. Vándorgyűlése, Siófok 2007. október 2-4. Program, összefoglalók 53. pp.

2. **Maróti-Nagy Ágnes**, Paulik Edit: Quality of life of postmenopausal women. 2nd International Conference on Gerontology 2008. szeptember 26-27. Arad, Románia. Abstract Book pp. 36.

3. **Nagy Ágnes**, Paulik Edit: A kockázati tényezők szerepe az osteoporosis rizikójának becslésében. (The role of the risk factors in the risk assesssment of osteoporosis) Népegészségügyi Tudományos Társaság XVI. Nagygyűlése 2008. ápr. 17-19. Pécs. *Magyar Epidemiológia* 2008;5(S):69-70.

4. **Maróti-Nagy Ágnes**: A táplálkozási szokások változása nőgyógyászati daganatos betegekben. Fiatal Higiénikusok Fóruma V. 2009. május 14-16. Eger. Előadás összefoglalók pp. 32-33.

5. **Maróti-Nagy Ágnes**, Paulik Edit: The Relationship Between Quality of Life of Postmenopausal Women and Some Demographic Factors. DKMT 11th Regional Conference on Environment and Health, 2009. május 15-16. Szeged CD pp. 54.

6. Paulik Edit, **Maróti-Nagy Ágnes**: Az egészségi állapot és az életminőség összefüggései. *Népegészségügy* 2009;87(3):154-155.

7. Paulik Edit, **Maróti-Nagy Ágnes**, Nagymajtényi László: A dohányzást korlátozó intézkedések megítélésének társadalmi egyenlőtlenségei. Népegészségügyi Tudományos Társaság XVIII. Nemzetközi Kongresszusa 2010. május 13-15. Orosháza-Gyopárosfürdő. *Magyar Epidemiológia* 2010;7(S1):65.