**Original Research**

# How do health problems affect the quality and everyday life of patients with endometriomas ?

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**Summary**

*Introduction:* The quality of human life is a subjective value and it largely depends on mental health, personality traits, preferences, and value system. This study aimed to discuss the incidence of health problems in patients with benign changes of reproductive organs (due to changes in the adnexa with the characteristics of endometrial cysts – endometriomas and other gynecological diseases, i.e. uterine myomas, other benign ovarian tumors), and influence of these problems with the daily functioning of the surveyed women. *Materials and Methods:* The study included patients treated surgically, due to changes in the adnexa with the characteristics of endometrial cysts (n = 24), other gynecological diseases (n = 45), i.e. uterine myomas (n = 22) and other benign ovarian tumors (n = 23) in 2017. The control group consisted of healthy patients (n = 67) who underwent routine, annual gynecological visits at the outpatient gynecological clinic, without changes within the reproductive organ (confirmed by using intravaginal ultrasound examination). The study research tool consisted of a questionnaire that was developed specifically for this study and the Nottingham Health Profile Questionnaire (NHP). The patients filled the questionnaires independently, one day prior to the procedure and in the control group prior to routine, annual doctor's visit. *Results:* Among patients with endometriosis, significantly higher intensity of pain, emotional reactions, physical mobility, and vital energy were found. Women with endometrial cysts significantly more frequently reported issues related to occupation (*Cramer's V* 0.578, $p \leq 0.001$), household chores (*Cramer's V* 0.597, $p \leq 0.001$), social life (*Cramer's V* 0.581, $p \leq 0.001$), family life (*Cramer's V* 0.576, $p \leq 0.001$), sexual life (*Cramer's V* 0.561; $p \leq 0.001$), participation in hobbies (*Cramer's V* 0.876, $p \leq 0.001$), and holidays (*Cramer's V* 0.876; $p \leq 0.001$). *Conclusions:* Among patients with endometriosis a significantly higher intensity of pain, emotional reactions, physical mobility and energy vital. Because the advancement of endometriosis does not correlate with subjective complaints, routine use of Nottingham Heath Profile Questionnaire in the patients with endometriosis may improve the assessment of the severity of the disease and evaluate the effectiveness of treatment in the future.

*Key words*: Endometrial cysts; Endometriosis; Gynecological diseases; Health problems; Nottingham Heath Profile Questionnaire.

## Introduction

Quality of life (QOL), as defined by the World Health Organization (WHO) is "the individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, and standards determined by environmental conditions" [1]. The human QOL is a difficult term to define, yet it is an indispensable element of functioning for each individual. Assessment of QOL is multi-faceted. Studies investigating QOL combine clinical aspect of the given disease as well as the psychological aspect. These two aspects may not be separated. The quality of human life is a subjective value and it largely depends on the mental health, personality traits, preferences, and value system. Thus, the same symptom, for example, restriction of physical activity may result in considerable deterioration of the subjective QOL in one individual, while in another individual, it may only signify a minor inconvenience [2]. Endometriosis is a chronic disease that involves the development of endometrium outside the uterine cavity and is often characterized by pain. The degree of pain in endometriosis is not proportional to the severity of the disease. However, pain associated with the disease negatively affects the QOL, limiting professional activity and social contacts [2].

There are various scientific tools that can be used to assess patients' QOL. One of such tools is the Nottingham Health Profile (NHP) [3]. The NHP measures the effects of health problems on daily functioning of patients. It is one of the most widely used tools validated in different languages. This study aimed to discuss the incidence of health problems in patients with benign changes in reproductive organs (due to changes in the adnexa with the characteristics of endometrial cysts and other gynecological diseases, i.e. uterine myomas, other benign ovarian tumors), and influence of these problems on the daily functioning of the surveyed women.

## Materials and Methods

This study included patients treated surgically at the Gynecology and Obstetrics Clinical Hospital of the Poznan University of Medical Sciences, due to changes in the adnexa characterized by endometrial cysts (n = 24), other gy-

Table 1. — *Study group characteristics.*

|  |  | Group K n = 67 | Group G n = 45 | Group E n = 24 |
|---|---|---|---|---|
| Age (years) |  | 30.55 | 38.91 | 30.04 |
| Education | Primary | 2 | 2 | 0 |
|  | Professional | 1 | 4 | 1 |
|  | Secondary | 11 | 11 | 3 |
|  | Tertiary | 53 | 28 | 20 |
| Place of residence | Village | 10 (14.9) | 9 (20.0) | 1 (4.2) |
|  | City to 50 thousand | 8 (11.9) | 2 (4.4) | 3 (12.5) |
|  | City from 50 thousand to 200 thousand | 13 (19.4) | 4 (8.9) | 2 (8.3) |
|  | City from 200 thousand to 500 thousand | 9 (13.4) | 8 (17.8) | 1 (4.2) |
|  | City over 500 thousand | 27 (40.3) | 22 (48.9) | 17 (70.8) |
| Marital status | Maid | 28 (41.8) | 7 (15.6) | 10 (41.7) |
|  | Married | 39 (58.2) | 37 (82.2) | 14 (58.3) |
|  | Single | 0 (0.0) | 1 (2.2) | 0 (0.0) |
| Employment situation | Manual labor | 6 (9.0) | 4 (8.9) | 2 (8.3) |
|  | Mental labor | 45(67.2) | 20 (44.4) | 16 (66.7) |
|  | Pension | 5 (7.5) | 0 (0.0) | 1 (4.2) |
|  | Retirement | 2 (3.0) | 2 (4.4) | 0 (0.0) |
|  | Studies | 6 (9.0) | 0 (0.0) | 1 (4.2) |
|  | Unemployed | 0 (0.0) | 18 (40.0) | 4 (16.7) |
| Average monthly income per 1 person | Less than PLN 500 | 2 | 1 | 1 |
|  | PLN 500–1000 | 62 | 43 | 22 |
|  | Over PLN 1000 | 3 | 1 | 1 |

necological conditions including uterine myomas (n = 22), and other benign ovarian tumors (n = 23) in 2017. The control group consisted of healthy patients (n = 67) who underwent routine, annual gynecological visits at the outpatient gynecological clinic, without changes within the reproductive organ (confirmed by using intravaginal ultrasound examination). The study research tool consisted of a questionnaire that was developed specifically for this study and the NHP. The patients filled the questionnaires independently, one day prior to the procedure and in the control group prior to routine, annual doctor's visit.

To be eligible for inclusion in the endometrioma or other gynecological disease group, cases needed to be confirmed by histopathological examination. The study included a group of 136 women aged 18–67 years. The qualification criterion for patients in the control group was an assumption of good health without coexisting diseases. Patients after intra-operational histopathological verification of the change, were divided into two study groups. The endometriomas group (E) consisted of women (n = 24) with histopathologically confirmed endometriomas, at age 30.04 ± 5.65, median 29.5 years. The other gynecological diseases group (G), consisted of patients (n = 45) following surgical treatment of benign changes of ovaries (n = 23), uterine myomas (n = 22), at age 38.91 ± 11.02, MEDIAN = 37 years. The control group (K) consisted of healthy women (n = 67), subject to routine, annual gynecological examination, at the age 30.55 ± 8.61, Median = 29 years.

The questionnaire developed specifically for this study comprised of ten closed questions. The majority of questions concerned age, education, place of residence, marital status, as well as financial situation, number of children and history of miscarriages, and overall state of health.

The NHP is a general patient self-evaluation of subjective health status in a number of areas and can be completed in five minutes [3]. The questionnaire was developed in 1975 in Nottingham and has been used by a number of organizations worldwide. The NHP has 24 validated language versions and has also been utilized in clinical research studies, especially when treatment effectiveness is considered. The respondents answered to the questions provided in the questionnaire independently, anonymously, the day before the surgery. The respondents were informed on the study objective.

This questionnaire consists of two parts. The first part concerns currently experienced problems related to physical, psychological, and social functioning associated with health status. The first part focuses on six dimensions of subjective state of health and comprises 38 dichotomized (yes/no) items which are related to: pain (n = 8), vital energy (n = 3), sleep disorders (n = 5), physical fitness (mobility) (n = 8), emotional reaction (n = 9), and social isolation (n = 5) [4]. The second part comprises of aspects of life affected [5, 6] and consist of seven items related to paid work, household chores, social life, family life, sexual life, interests and hobbies, and use of free time [5]. The maximum score that can be achieved using the NHP is 100. The higher the score, the greater the severity of health problems. The

*Table 2. — Comparison of subjective dimensions of health status in individual groups.*

| Group | | | VITAL ENERGY | PAIN | EMOTIONAL REACTIONS | SLEEP DISORDERS | SOCIAL ISOLATION | PHYSICAL MOBILITY |
|---|---|---|---|---|---|---|---|---|
| control | Age | Correlation analysis with Pearson | 0.195 | 0.081 | 0.239 | -.261* | -0.172 | .318* |
| | | Significance (two-sided) | 0.114 | ,515 | 0.051 | 0.038 | 0.163 | 0.009 |
| other gynecological diseases | Age | Correlation analysis with Pearson | .300* | -0.122 | 0.153 | 0.099 | -0.011 | 0.229 |
| | | Significance (two-sided) | 0.045 | 0.426 | 0.315 | 0.516 | 0.944 | 0.131 |
| endometrial cysts | Age | Correlation analysis with Pearson | -0.095 | -0.075 | -0.119 | 0.134 | -0.226 | -0.12 |
| | | Significance (two-sided) | 0.659 | 0.729 | 0.579 | 0.533 | 0.289 | 0.576 |
| control | education | Correlation analysis with Pearson | -0.004 | -.513* | -0.169 | -.607* | -0.203 | -.259* |
| | | Significance (two-sided) | 0.973 | 0 | 0.171 | 0 | 0.1 | 0.034 |
| other gynecological diseases | education | Correlation analysis with Pearson | -0.266 | -0.143 | -.429* | -.327* | -.381* | -.469* |
| | | Significance (two-sided) | 0.078 | 0.348 | 0.003 | 0.028 | 0.01 | 0.001 |
| endometrial cysts | education | Correlation analysis with Pearson | -0.037 | -0.183 | 0.047 | 0.16 | -0.022 | 0.013 |
| | | Significance (two-sided) | 0.864 | 0.392 | 0.829 | 0.456 | 0.92 | 0.952 |

*. Means difference is significant at 0.05.

scores in part one range from 5.83 to 39.2 depending on the question and are summarized in a scoring sheet. The second part has only yes/no answers and in the case of uncertainty the patient is asked to select which is more true at this time [6].

Quantitative data was presented as mean values, standard deviation ($\pm$ SD) and medians. Statistical analysis was performed using the Kruskal-Wallis test for independent samples. Significance values for multiple tests were corrected using the Bonferroni method. Statistical analysis for qualitative data are presented in the form of numerical value of persons per given category (n). In order to compare qualitative traits between the groups, the Chi2 test was used, and the intensity was estimated based on the Cramer's V contingency coefficient. To assess the occurrence of a relationship between individual variables and the strength of this relationship, Pearson correlation coefficients were calculated. The limit $p = 0.05$ value was assumed in all statistical tests.

Methods of patient enrollment, obtainment the research material, and its storage were approved by the Bioethics Committee at the Poznan University of Medical Sciences (Resolution No. 1127/18). Patient enrollment methods, ways of obtaining the research material, and its storage were previously approved by the Director of the Gynecology and Obstetrics Clinical Hospital of the Poznan University of Medical Sciences (specifically approved only for this study on January 16, 2018; Resolution No. 5/2018). The patients provided written informed consent for this study. The study was not financed with the funds for education.

**Results**

The mean age of patients in the group with endometriomas (E) was 30.04 years, 38.91 years in patients with other gynecological conditions and 30.55 years in patients in the control group (K). All women reported no significant coexisting diseases. General characteristics of the studied group are presented in Table 1.

Patients with endometriosis had higher vital energy compared with patients who had other gynecological conditions ($p = 0.016$). Similarly, there were statistically significant differences between patients with endometriosis versus other gynecological ($p \leq 0.001$) and between patients with endometriosis versus control group ($p \leq 0.001$). A larger proportion of patients with endometriosis reported pain and emotional reactions compared with patients with other gynecological conditions ($p \leq 0.001$).

No statistically significant differences were found for sleep disorders among the three groups. A statistically significant difference was found for social isolation between patients with other gynecological conditions versus control group ($p = 0.003$). Compared with patients with endometriosis, a higher proportion of patients in the control group reported social isolation.

Correlation analysis using Pearson's correlation coefficients demonstrated statistically significant relationship between age and the incidence of sleep disorders ($r = -0.261$; $p = 0.038$) and physical mobility ($r = 0.318$; $p = 0.009$) in the control group. In patients with other gynecological conditions, a statistically significant relationship was found between age and vital energy ($r = 0.300$; $p = 0.045$). Similarly, a statistically significant relationship was found between education and the occurrence of pain ($r = -0.513$; $p \leq 0.001$), sleep disorders ($r = -0.607$; $p \leq 0.001$) and physical mobility ($r = -0.513$; $p \leq 0.01$) in the control group. In patients with other gynecological conditions, a statistically significant relationship was found between education and the occurrence of emotional reactions ($r = -0.429$; $p = 0.003$), sleep disorders ($r = -0.327$; $p = 0.028$), social isolation ($r = -0.381$; $p = 0.010$), and physical mobility ($r = -0.469$; $p = 0.001$) (Table 2).

Women with endometrial cysts significantly more frequently reported issues related to occupation (*Cramer's V* 0.578, $p \leq 0.001$), household chores (*Cramer's V* 0.597, $p \leq 0.001$), social life (*Cramer's V* 0.581, $p \leq 0.001$), fam-

ily life (*Cramer's V* 0.576, $p \leq 0.001$), sexual life (*Cramer's V* 0.561; $p \leq 0.001$), participation in hobbies (*Cramer's V* 0.876, $p \leq 0.001$), and holidays (*Cramer's V* 0.876; $p \leq 0.001$). The issues were not related to place of residence, mean income per person, marital or employment status. Patients with endometriosis possessed significantly higher values for the variable "daily life inconvenience" compared with the other two groups.

## Discussion

Assessment of the effects of health problems on the day-to-day functioning is significant for patients with chronic diseases. A chronic disease may impact a patient's life in a myriad of dimensions. Some chronic diseases may require temporary or permanent changes, some of which include, the need for a change in lifestyle, need to undergo a long-term therapy, and issues relating to stigma [7]. Endometriosis is a chronic disease, characterized by overgrowth of the endometrium outside of the uterine cavity, occurring in the form of peritoneal adhesions and metastases and endometriomas [8, 9]. Pain is a common symptom among patients with endometriosis, the severity of which may depend on disease severity [10].

The degree of pain sensation in endometriosis is not proportionate to the degree of disease advancement. Severe pain can result in small peritoneal endometriosis foci, while large cysts may not result in any ailments [11]. The pain sensation associated with the disease may have negative influence on the QOL, limiting professional activity and social contacts [12, 13]. Women with chronic pain more frequently report lower QOL and mental health, including sexual activity [14-16]. Experiencing chronic pain may greatly jeopardize the QOL of women with endometriosis and may be associated with a loss of work efficiency, physical weakness and decline in functioning within social groups [17, 18]. A meta-analysis by Culley *et al.* [19] demonstrated that endometriosis has a significant social and psychological impact on daily activities, intimate relations, planning and having children, education and work, mental health, and emotional well-being [19]. Márki *et al.* [20] observed that physical symptoms of pain and issues with regulation of emotions related to psychological stress may have a negative impact on the QOL of women with endometriosis [20]. Higher anxiety and depression levels and lower QOL index have been reported in a group with ovarian endometriosis compared with a group of patients with benign changes in the adnexa [21].

Results from the current study is in agreement with the above observations. Independent of place of residence, mean income per person, marital or employment status, women with endometrial cyst significantly more frequently reported issues related to occupation, household chores, and social and family life. Additionally, they more frequently reported problems with sexual life, participation in hobbies and holidays. Among patients with endometriosis, significantly higher intensity PAIN, EMOTIONAL REAC-

TIONS, PHYSICAL MOBILITY, and VITAL ENERGY was found in the current study. Significant disorders occurred in the psychological dimension of endometriosis, however, they did not have as significant negative impact on the contact with the environment.

Women with endometriosis can adapt to the disease by developing coping mechanism which foster good social relations, realization of goals, and derivation of significant life satisfaction [22]. Patient's personality, sex, age, education, economic and social status, cultural influences, and environmental conditions are of great importance in the perception of the disease, assessment of its impact on daily functioning, and methods of dealing with its physical and psychological consequences [7]. Endometriosis has been shown to be more common among women with a high level of education, who devote significantly greater amount of time for personal development and career and shaping living conditions [22]. It may be assumed that patients who are able to adapt to new conditions and the advancement of the disease and the accompanying ailments may likely experience a deterioration in QOL at a lesser degree. Thus, assessment of the influence of health problems associated with endometriosis on the daily functioning of a patient and the ability to cope with these issues appears to be worthy of consideration.

## Conclusions

A significantly higher intensity of PAIN, EMOTIONAL REACTIONS, PHYSICAL MOBILITY, and ENERGY VITAL was found among patients with endometriosis. Because the advancement of endometriosis does not correlate with subjective complaints routine use of Nottingham Heath Profile Questionnaire in patients with endometriosis may improve the assessment of the severity of the disease and evaluate the effectiveness of treatment in the future.

## Acknowledgments

## Conflict of Interest

The authors declare no conflict of interest.

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