Streszczenie w języku angielskim

## Introduction

With reference to the holistic concept of health, research has been carried out on the behavioural and psychological determinants of health and quality of life in women with hypothyroidism. A healthy lifestyle, including a rational model of nutrition and physical activity, support the treatment process and reduce the risk of developing complications of hypothyroidism, including obesity, hyperlipidaemia, diseases of the osteoarticular system and others. Due to the relationship between the activity of the thyroid gland and the central nervous system, studies were also undertaken on the depressive symptoms of the patients. Comprehensive assessment of health determinants in the context of the quality of life of women with hypothyroidism is part of the modern trend of research in the field of health promotion and health psychology.

## Objective of the work

The aim of the research was to analyse the behavioural and psychological determinants of the quality of life in women with hypothyroidism.

## Material and methods

The research was conducted in the years 2019-2020 among women diagnosed with hypothyroidism (of various aetiology) in Silesian endocrinology offices. The study included a group of 220 women aged 20–54 (M=33.85, SD=9.89). The most common causes of hypothyroidism were: Hashimotos disease (90.07%), surgical removal of the thyroid gland (5.39%) and treatment with radioactive iodine (4.54%). In terms of somatic indicators, women with norm weight (52.05%) and overweight (29.68%) dominated, less often with obesity (12.79%) and underweight (5.48%).

The following research tools were used: a) the International Physical Activity Questionnaire (IPAQ); b) Inventory of Health Behaviour (IZZ Z. Juczyński); c) Questionnaire of nutritional behaviour of people with hypothyroidism (author M. Gacek); d) the Satisfaction with Life Scale (SWLS), e) the Quality of Life Scale (WHOQoL-BREF), f) the ThyPRO.pl Quality of Life Scale and g) the Beck Depression Scale.

In the analysis of the results, the Pearson-Sperman correlation analysis and multiple regression analysis were used, assuming the significance level of $\alpha = 0.05$.

Results

Among the areas of pro-health behaviour (IZZ), women with hypothyroidism obtained the highest results in terms of prophylactic behaviour (Me=23.0) and proper eating habits (Me=22.0), followed by a positive mental attitude (Me=21.0 ) and health practices (Me=21.0). The overall pro-health behaviour index was 87.0.

Among the domains of physical activity (IPAQ), women achieved the highest score in walking (Me= 1,155 MET- min/week), and the median total level of physical activity was 2,133 MET- min/week.

Among the qualitative nutritional recommendations for people with hypothyroidism, women most severely restricted soy and its products in their diet, kept time intervals of 30-60 minutes between the drug and the meal, and followed the doctors recommendations (Me=5.0). They took great care (Me=4.0) to consume foods rich in iron, zinc, selenium, vitamins D and A, omega-3 PUFAs, and kept the intervals between the drug and supplements (Me=4.0).

Among the areas of the quality of life scale in thyroid diseases (ThyPro.pl), the highest scores for women were for fatigue (Me = 4.0), followed by symptoms of hypothyroidism (Me=2.5), energy (Me=2.33) and eye symptoms (Me=2.0). The overall assessment of the quality of life on the ThyPro.pl scale (negative) was 2.0.

Among the areas of the WHOQoL quality of life scale, women obtained the highest scores in the environmental layer (Me=14.5), and the lowest in the somatic sphere (Me= 11.43).

Statistical analysis showed that all domains of health behaviours and the general index of pro-health behaviours were negatively associated with depressive symptoms, whereby the

strongest association observed with a positive mental attitude and the general index of pro-health behaviours ($p<0.001$). Moreover, it was found that with the decrease in the level of moderate physical activity, the intensity of depression symptoms increased ($p=0.033$). In terms of the relationship between nutrition and depression, it was found that the level of depression symptoms decreased with an increase in the frequency of the following eating behaviours: taking care of iodine consumption ($p=0.017$), iron ($p=0.001$), zinc ($p<0.001$), selenium ($p=0.011$), vitamin D ($p=0.007$), vitamin A ($p=0.001$) and omega 3 fatty acids ($p=0.004$).

In terms of the relationship between health behaviours, life satisfaction and quality of life, it was shown that a positive mental attitude was positively related to life satisfaction ($p<0.001$), energy ($p<0.001$) and all four aspects of quality of life (somatic, psychological, social and environmental) ($p<0.001$), while negative with symptoms of hyperthyroidism and hypothyroidism ($p<0.001$), eye symptoms ($p=0.001$), fatigue ($p=0.003$), problems with concentration ($p<0.001$), nervousness ($p<0.001$), depression ($p<0.001$), imbalance ($p=0.026$), appearance problems ($p=0.039$) and negative overall quality of life ($p=0.010$). Preventive behaviours were positively related to life satisfaction ($p=0.004$), energy ($p=0.046$) and all four aspects of quality of life (somatic, psychological, social and environmental), and negatively related to depression ($p=0.034$). Correct eating habits were positively related to the somatic ($p<0.001$) and psychological aspects of the quality of life ($p=0.003$). Health practices were positively related to life satisfaction ($p<0.001$) and the somatic ($p=0.006$) and psychological ($p=0.022$) aspects of quality of life, while negatively related to symptoms of hypothyroidism ($p=0.037$) and depression ($p=0.005$). The overall health behaviour index was positively related to life satisfaction ($p<0.001$), energy ($p=0.002$) and all four aspects of quality of life (somatic, psychological, social and environmental), and negatively related to hypothyroidism symptoms ($p=0.010$), eye symptoms ($p=0.019$), fatigue ($p=0.011$), problems with concentration ($p=0.022$), nervousness ($p=0.034$) and depression ($p<0.001$).

In terms of the relationship between physical activity and satisfaction with life and quality of life, it was found that with the increase in the level of intense physical activity, the level of energy ($p=0.033$) and the somatic aspect of the quality of life ($p=0.004$) increased, while with the increase in the level of moderate physical activity the level of social problems (with social contacts) decreased ($p=0.046$). It was also observed that with the increase in the time spent on walking, the level of symptoms related to the goitre ($p=0.039$), depression ($p=0.007$) and

emotional imbalance ($p$=0.019) increased, and at the same time the negative assessment of the overall quality of life increased ($p$=0.007). The more time spent sitting, the higher the level of symptoms related to the goitre ($p$=0.050), hyperthyroidism ($p$=0.020), the more problems with concentration ($p$=0.010) and nervousness ($p$=0.021). On the other hand, the overall level of physical activity was positively associated with depression ($p$=0.032) and lack of balance ($p$=0.022).

In terms of the relationship between eating behaviour and satisfaction with life and quality of life, it was found, inter alia, that with the increase in the general level of normal eating behaviour in thyroid diseases, the level of problems with appearance increased ($p$=0.035). With the increase in the environmental ($p$=0.037) and social ($p$=0.001) quality of life, the care for iodine intake increased. With the consumption of iron-containing products, the level of life satisfaction increased ($p$=0.012), the level of energy ($p$=0.040), the level of somatic ($p$=0.015) and psychological quality of life ($p$=0.001) increased, while problems related to concentration decreased ($p$=0.025). The consumption of iron-containing products increased with the increase in the level of social and environmental quality of life ($p$=0.001). Along with zinc consumption, the level of life satisfaction ($p$=0.039), energy levels ($p$=0.014) and psychological quality of life ($p$=0.002) increased. The consumption of zinc-containing products increased with the increase in the level of social and environmental quality of life ($p$<0.001). Along with selenium consumption, the level of somatic quality of life increased ($p$=0.006). The consumption of products containing selenium increased with the rise in the level of social ($p$=0.004) and environmental quality of life ($p$=0.025). Along with the consumption of vitamin D, the level of energy ($p$=0.011), somatic ($p$=0.001) and psychological ($p$=0.025) quality of life increased. The consumption of products containing vitamin D increased with the increase in the level of social ($p$=0.011) and environmental ($p$=0.001) quality of life. Along with the consumption of products containing omega-3 fatty acids, the level of life satisfaction increased ($p$=0.026), the level of energy ($p$=0.027), the level of somatic ($p$=0.034) and psychological ($p$=0.004) quality of life increased. Consumption of products containing omega 3 fatty acids increased with the increase in the level of social ($p$<0.001) and environmental ($p$=0.001) quality of life. As the consumption of cruciferous vegetables was reduced, the level of sight/eye symptoms increased ($p$=0.026). With the use of a slimming diet, the level of life satisfaction ($p$=0.012) and the psychological aspect of quality of life ($p$<0.001) and energy ($p$=0.048) decreased due to the increased body weight. At the same time, the level of symptoms of hypothyroidism ($p$<0.001) and symptoms

related to vision ($p$=0.002) increased. Due to constipation, the level of life satisfaction ($p$=0.003) and the psychological aspect of quality of life ($p$<0.001) and energy ($p$=0.024) decreased with the use of a diet containing large amounts of fibre. At the same time, there was an increase in the symptoms of hypothyroidism (p<0.001) and symptoms related to sight/eyes ($p$=0.001), as well as fatigue ($p$=0.027) and appearance problems ($p$=0.024). With the periodic use of the autoimmune protocol, the level of sexual problems decreased ($p$=0.020).

Summary and Conclusions

1.Among women with hypothyroidism, an average level of pro-health behaviours, an average level of physical activity and a varied level of implementation of individual rational nutritional behaviours were found, which could reduce their health potential.

2. Women with hypothyroidism showed an average level of depressive symptoms, an average level of life satisfaction and an average level of quality of life, as well as different levels of individual quality of life domains, which suggests the influence of the disease on the level of life satisfaction and quality of life.

3. Negative relationships between depressive symptoms and the level of pro-health behaviours, the level of moderate physical activity and some correct nutritional behaviours were confirmed.

4. Positive relationships between satisfaction with life and some pro-health behaviours and some correct eating behaviours have been demonstrated. At the same time, negative links between some health disorders (and the use of therapeutic diets) and the level of life satisfaction were confirmed.

5. Positive relationships between pro-health behaviours and intense and moderate physical activity, as well as rational food choices and quality of life were found.

6. The negative relationship between depression symptoms and the level of life satisfaction and the quality of life of women with hypothyroidism was demonstrated.

Key words: hypothyroidism, women, health behaviour, physical activity, diet, depression, life satisfaction, quality of life