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System analysis of the quality of life self-assessments from the SF-36 questionnaire in breast-feeding or milk formula feeding women

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Key words: System Analysis, Quality Of Life, SF-36 Questionnaire.

Objective. A system analysis of the self-assessments of quality of life (QOL) and the possible rational correction of psychological dysadaptation of nursing women.

Materials and Methods. A survey among 134 healthy women aged 21 to 40, married and having children aged 1 to 12 months at the time of the survey. The first group consisted of women with breast-fed children (1 to 6 months old and “exclusively breastfed” or 6 to 12 months old and receiving “rational breast feeding”); the second group consisted of women with formula-fed children. The non-specific SF-36 questionnaire has been used for the survey. Statistica 6.0 licensed software has been used for statistical processing of gathered scores.

Results. The breast-feeding women (Group 1) showed higher total results in self-assessment of the quality of life compared to the women forced to feed their children with breast milk substitutes (Group 2). The difference affects all 8 scales of the questionnaire, thus varying from the a priori values of the “null hypothesis” ($\chi^2=5.33$, $df=1$) with statistical error probability of $p=0.02$. The most significant differences of the SF-36 questionnaire assessment indicator scores between the two groups have been identified on BP (intensity and frequency of pain) and MH (mental health) scales.

Conclusions. Our observations have shown significant differences of self-assessments of QOL by women feeding their children in different ways. Breast feeding leads to positive changes in the system of self-assessment of QOL, the lives of nursing women are characterized by greater social support and role activity; they are more socially adapted, not prone to depression and unreasonable mood swings.

Системний аналіз самооцінок якості життя за анкетною SF-36 у жінок, які годують дітей грудним молоком або молочними сумішами

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Мета роботи – здійснити системний аналіз порівняльних оцінок якості життя (ЯЖ) за допомогою анкети SF-36 жінок, які мають дітей грудного віку, за умовами годування їх груддю або сумішами-замінниками грудного молока та можливої раціональної корекції психологічної дизадаптації жінок-годувальниць.

Матеріали та методи. Здійснили анкетування 134 здорових жінок віком від 21 до 40 років, які перебувають у шлюбі та на час дослідження мали дітей віком від 1 до 12 місяців. До першої групи включені жінки, чий діти отримували природне вигодовування («тільки грудне» до 6 місяців і «раціонально грудне» у віці 6–12 місяців), до другої – жінки, чий діти годувалися сумішами. Для анкетування використали неспецифічний опитувальник SF-36 для самооцінок якості життя. Статистично дані опрацювали за допомогою ліцензійної програми Statistica 6.0.

Результати. Жінки, які годують груддю (1 група), перевершують у своїх самооцінках якості життя за сумою балів жінок, які змушені годувати своїх дітей замінниками грудного молока (група 2). Різниця стосується всіх 8 шкал анкети, що з імовірністю статистичної похибки $p=0,02$ відрізняється від апіорних значень «нульової гіпотези» ($\chi^2=5,33$, $df=1$). Найбільш значущі відмінності бальних оцінок виявлено по шкалах ВР («інтенсивність і частота болю») та МН («психічне здоров'я»).

Висновки. Спостереження показали значущі відмінності самооцінок ЯЖ жінок, які годують дітей різними способами. Під час годування дитини груддю відбуваються позитивні зміни в системі самооцінок ЯЖ, життя жінок-годувальниць груддю має більшу соціальну підтримку, жінки мають більшу ролеву активність, більш соціально адаптовані, не схильні до депресії та немотивованим перепадам настрою.

Ключові слова: системний аналіз, якість життя, анкета SF-36.

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Системний аналіз самооцінок якості життя по анкеті SF-36 у жінок, вскармливаючих груддю или молочними смесями

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Цель работы – провести системный анализ сравнительных оценок качества жизни (КЖ) по анкете SF-36 женщин, имеющих детей грудного возраста, в условиях вскармливания их грудью или смесями – заменителями грудного молока для возможной рациональной коррекции психологической дизадаптации женщин-кормилиц.

Материалы и методы. Проведено анкетирование 134 здоровых женщин в возрасте от 21 до 40 лет, состоящих в замужестве и имеющих на момент исследования здорового ребенка в возрасте от 1 до 12 месяцев. Первую группу составили женщины, дети которых находились на естественном вскармливании («исключительно грудное» до 6 месяцев и «рациональное грудное» от 6 до 12 месяцев), во вторую группу вошли женщины, чьи дети кормились смесями. Для анкеты использовался неспецифический опросник SF-36 для самооценки качества жизни. Статистически данные обработали с помощью лицензионной программы Statistica 6.0.

Результаты. Женщины, кормящие грудью (группа 1), превосходили в своих самооценках качества жизни по суммарному количеству баллов женщины, вынужденных вскармливать ребенка заменителями грудного молока (группа 2). Различия касались всех 8 шкал анкеты, что с вероятностью статистической ошибки $p=0,02$ отличается от априорных значений «нулевой гипотезы» ($\chi^2=5,33$, $df=1$). Особо существенные различия бальных оценок показателей анкеты SF-36 в группах выявлены по шкалам ВР («интенсивность и частота боли») и МН («психическое здоровье»).



Выводы. Проведённые наблюдения показали существенные различия самооценок качества жизни, данные женщинами, вскармливающими своих детей различными способами. В ходе кормления грудью происходят позитивные изменения в системе самооценок качества жизни, жизнь женщин-кормилиц грудью характеризуется большей социальной поддержкой и ролевой активностью, более социально адаптированы, не склонны к депрессии и необоснованным перепадам настроения.

Ключевые слова: системный анализ, качество жизни, анкета SF-36.

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The diverse biological, psychological, and social aspects of breast feeding still draw interest and are actively studied [1]. Without a doubt, nursing mother is the central figure of the family. Within the family relations system, the physical, psychological, and social well-being of the mother affects not only the child's health, but also, ultimately, public health. Breast feeding is perceived by the society as a traditional, but currently optional element of motherhood [2]. On the other hand, breast feeding is still strongly supported and approved. However, we should admit that women are not certainly able to provide breast feeding to their children. From the biological perspective, the problem of feeding the infants deprived of breast feeding has been resolved through the use of high-tech artificial nutrient mixtures. However, from the perspective of the ethical evaluation of the artificial feeding problem, one could find conditions for emergence of personal and family psychological conflicts, both real and imaginary, but nevertheless capable to affect family life.

While studying the available literature, we found no data on the comparative evaluation of the quality of life via the SF-36 questionnaire [3] for women with infants undergoing breast feeding or feeding with breast milk substituting mixtures. The objective of our research was to scrutinize the self-assessment of traditional components that characterize the quality of life with a view to a possible rational correction of psychological dysadaptation of nursing women.

Materials and methods

A direct open questioning of healthy women aged 21 to 40 being married and having healthy children aged 1 to 12 months at the time of research has been conducted. The research has been conducted in 2 municipal children's clinics (consultations) of Zaporizhzhia and Kyiv during the so-called preventive "healthy child days". The profiles of respondents have been selected randomly. 134 women agreed to participate in the survey, while 11 (7.6 %) refused due to various reasons. During the preliminary interviews, 73 women have been selected for the observation

Group 1. At the time of the research, those women's children were either between 1 to 6 months old and "exclusively breast-fed" or 6 to 12 months old and receiving "rational breast feeding" with gradual introduction of decreed complementary foods. The observation Group 2 has been comprised of 31 women whose children were undergoing early (from the first weeks or months of life) feeding with adapted milk formula based on cow's milk. 20 (14.9 %) women have been excluded from the research, as their type of feeding did not meet the above-mentioned criteria. Later, the respondents of both 1st and 2nd groups have been asked to answer the questions of the SF-36 questionnaire.

The SF-36 questionnaire is a non-specific questionnaire used to evaluate quality of life (QOL) and is widely applied in the US and Europe for quality of life studies in healthy individuals and patients with acute and chronic diseases [4]. The questionnaire consists of 36 questions grouped into 8 scales assessed with point-based scores. The following parameters are evaluated: physical functioning (PF), role-physical functioning (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role-emotional functioning (RE), and mental health (MH). Statistica 6.0 licensed software has been used for statistical processing of gathered scores. We have calculated average values, statistical error of the mean values, fitting criterion for the data values and expected χ^2 , Student's test of sample differences criterion and Spirmer's pair correlation coefficients (R) [5,6]. The R values above 0.5 have been taken into account, which corresponds to a sufficiently high rate of sample variation contingency. The I. Terentyev's graphic correlation pleiades (based on materials of professor R. P. Nartsissov's personal archive, Moscow) have been used as an element of the studied phenomenon's system relations analysis.

Gathered results and discussion

The comparison of the average values of the scores obtained on the 8 scales of the observation groups is represented in the *Table 1* below.

As the *Table 1* shows, breast feeding women (Group 1) had

Table 1

Quality of life self-assessments in women based on the availability of breast feeding

| Observation groups | Quality of life indicators (points) | | | | | | | | Total score |
|---|-------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|
| | PF M±m | RP M±m | BP M±m | GH M±m | VT M±m | SF M±m | RE M±m | MH M±m | |
| Group 1 (breast feeding, n=73) | 96.9±0.6 | 81.5±3.4 | 84.1±2.4 | 86±1.7 | 62.2±2.1 | 91.3±1.7 | 71±4.4 | 76.2±1.7 | 649±2 |
| Group 2 (no breast feeding, n=31) | 96.9±0.8 | 76.6±5.6 | 75.5±6.5 | 81.8±3.4 | 57.1±3.3 | 89.5±3.0 | 67.7±7.0 | 68.6±3.8 | 614±4 |
| p | >0.5 | >0.2 | =0.06 | >0.1 | >0.1 | >0.3 | >0.3 | <0.02 | <0.001 |

higher self-assessments of quality of life (based on the total number of points) than the group of women forced to feed their children with breast milk substitutes (Group 2). It is noteworthy that the differences are observed on all 8 scales of the questionnaire, which – with a statistical error probability $p=0.02$ – differs from the “null hypothesis” a priori values ($\chi^2=5.33$, $df=1$). The most significant differences of the SF-36 questionnaire assessment indicator scores between the two groups have been identified on BP (intensity and frequency of pain) and MH (mental health) scales.

An attempt of system analysis of the aspects of quality of life subjective assessment in women during the infant care period has been conducted via the analysis of the pair correlation coefficients (graphic correlation pleiades) able to identify the mutual influences between the assessments (Fig. 1).

According to the results, the respondents in both observation groups show parallelism in their assessments of MH and RE ($R=0.58$ and 0.56 respectively; $p<0.05$), MH and VT ($R=0.65$ and 0.79), RP and SF ($R=0.5$ and 0.61). Obviously, MH (mental health) is one of the key centers of QOL self-assessment system formation due to its repeatability in different groups and largest number of structural links connecting it with the other self-assessment components. However, significantly ($p=0.02$) lower values of MH in women from Group 2, according to the

Table 1, are characterized by close direct correlations between MH and RE ($R = 0.73$; $p < 0.05$), MH and SF ($R=0.83$; $p<0.05$), and also, indirectly, between MH and other QOL self-assessments, which is not common in the correlation pleiades of the representatives of Group 1 (Fig. 1). In women from Group 2, the GH (general health) score has been affected by the assessments of all quality of life elements, which is confirmed by direct correlations with SF ($R=0.58$; $p<0.05$), RP ($R=0.67$), and BP ($R=0.7$).

Another significant, in our view, structural center of the system is the BP (bodily pain, sickness) indicator. It should be admitted that “pain” references have been mainly observed in women from Group 1. However, the correlation analysis shows that BP references are autonomous and are not correlated with any other indicators of the SF-36 questionnaire, and are probably caused by purely biological reasons. In contrast, BP indicator values in women from Group 2 ranges conjugatively with a significant number of QOL indicators, in particular, with RP and GH, and, indirectly, with SF, PF, and VT. Such correlation pleiades indicate the existence of a number of psychological and social reasons for “sickness” in those women.

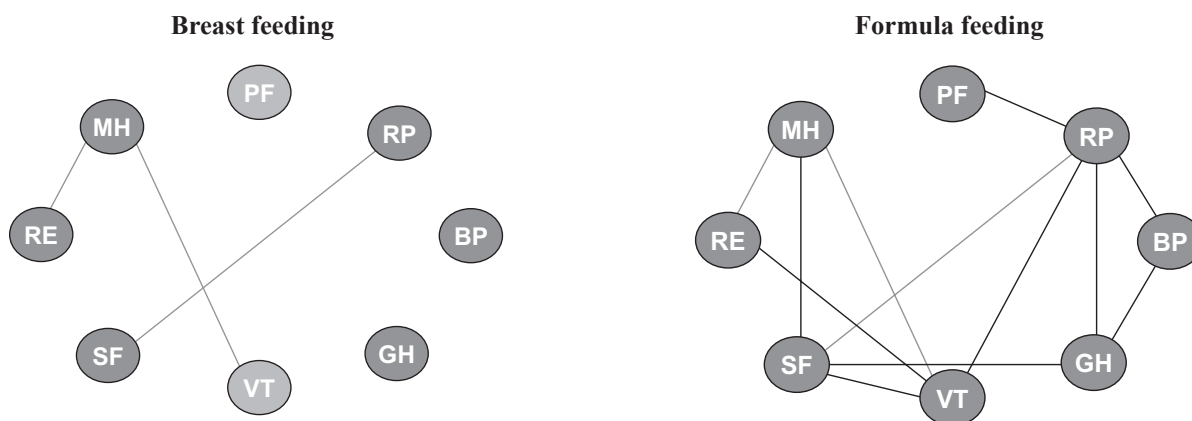


Fig. 1. Direct correlations between the QOL scores from the SF-36 questionnaire in women with different types of child feeding.

Conclusions

In summary, our observations have shown significant differences of QOL self-assessments in women feeding their children in different ways. Nursing brings positive changes into the QOL self-assessment system, although they might be accompanied by pain and sickness. The latters could be explained by both breast nipple reflexogenic zone irritation factor caused by sucking and elevated fatigue during lactation. However, even despite these difficulties, the lives of nursing women are characterized by greater social support and role activity; they are more socially adapted, not prone to depression and unreasonable mood swings. On the other hand, the self-assessments of women unable to

breast feed due to certain reasons were characterized by hidden self-doubt and mental, physical, and social depression. The findings of this research could be applied by family doctors and pediatricians in order to prevent the difficulties that may occur in women during the first year of their children’s lives, improve their quality of life, and also improve the family microclimate. It is advisable to avoid using the “artificial feeding” term as a concept that can be interpreted negatively in conversations with the mothers. We suggest using such alternative expressions as “milk formula”, “bottle feeding”, etc.

Conflicts of Interest: authors have no conflict of interest to declare.

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