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Risk Perception of Unconventional Methods of Treatment

Percepcja ryzyka niekonwencjonalnych metod terapii

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Abstract

Background. In recent years, more and more patients have decided to use unconventional methods of treatment. Decisions regarding the choice of therapy entails assessment of the risks involved.
Objectives. The aim was to define risk perception of unconventional methods of treatment and compare the qualitative and quantitative risk assessments of healthy individuals with those of ill persons.
Material and Methods. This study comprised 292 persons, including 78 patients of the allergy ward of the Clinic of Internal Diseases and Allergology, 49 patients hospitalized on the oncology ward of the Lower Silesian Oncology Center, and 165 healthy individuals. Thirteen unconventional treatment methods were studied using the "Scale of Risk Perception of UMT" developed by the author of the project.
Results. Healthy people tended to consider unconventional methods of treatment to be more risky than did the patients. The most striking differences in risk perception were observed between healthy people and those hospitalized because of cancer.
Conclusion. Ill persons exhibit a tendency to diminish the risk related to unconventional methods of treatment. The state of disease, particularly of a lethal disease, creates a more optimistic approach as to the effectiveness of these methods (**Adv Clin Exp Med 2006, 15, 6, 1037–1045**).

Key words: unconventional methods of treatment, risk perception, alternative medicine.

Streszczenie

Wprowadzenie. Coraz więcej pacjentów wybiera niekonwencjonalne metody leczenia. Decyzja o sięgnięciu po niekonwencjonalne metody terapii wiąże się z koniecznością oceny ryzyka związanego z ich stosowaniem.
Cel pracy. Ustalenie, jak ludzie spostrzegają ryzyko niekonwencjonalnych metod terapii. Porównywanie ilościowych i jakościowych ocen ryzyka związanego z niekonwencjonalnymi metodami terapii między osobami zdrowymi i chorymi.
Materiał i metody. W badaniu wzięło udział 292 osoby, w tym 78 chorych hospitalizowanych na oddziale alergologii Katedry i Kliniki Chorób Wewnętrznych i Alergologii, 49 chorych hospitalizowanych na oddziale onkologicznym Dolnośląskiego Centrum Onkologii oraz 165 osób zdrowych. W badaniu zastosowano własną „Skalę Percepcji Ryzyka NMT". Badaniem objęto 13 niekonwencjonalnych metod terapii.
Wyniki. Osoby zdrowe spostrzegają niekonwencjonalne metody terapii jako bardziej ryzykowne niż osoby chore. Największe różnice w percepcji niekonwencjonalnych metod terapii i ocenie ich ryzyka zanotowano między osobami zdrowymi i hospitalizowanymi z powodu nowotworu.
Wnioski. Osoby chore tendencyjnie pomniejszają ryzyko niekonwencjonalnych metod terapii. Sytuacja choroby, zwłaszcza przebiegającej z bezpośrednim zagrożeniem życia, powoduje większy optymizm w ocenie skuteczności tych metod (**Adv Clin Exp Med 2006, 15, 6, 1037–1045**).

Słowa kluczowe: niekonwencjonalne metody leczenia, percepcja ryzyka, medycyna alternatywna.

In recent years, unconventional methods of treatment have gained popularity. Use of such therapies is becoming increasingly more common in a broader cultural context. The fact that these practices have blossomed is certainly the result of both the general approach of mainstream medicine towards man and disease, which has its roots in the Cartesian idea of a basic division between mind and body, and new cultural trends, such as the New Age movement and the popularity of ecolo-

gy, which create conditions favorable to accepting scientifically inexplicable events, theories, and therapies. There is a variety of terminology related to therapies which do not belong to mainstream medicine: unconventional medicine, alternative medicine, non-medical treatment, natural medicine, complementary medicine, holistic medicine, para-medicine, and non-academic medicine.

The definition of what is unconventional fluctuates and depends on both time-period and culture. Some methods regarded as conventional in the past, such as bloodletting, are today considered unconventional, while the previously unconventional hydrotherapy is today among the standard procedures of physical therapy. Moreover, medical circles are not unanimous in their approach towards different therapies. To mention only acupuncture, the Polish Allergological Society officially disapproved of this method, while there is an acupuncture section of the Polish Physicians' Society [1]. In this paper, the term "unconventional methods of treatment" (UMT), proposed by P. Fisher and A. Ward [2], will be used and, following Eisenberg [3], it is assumed that these are methods that do not belong to mainstream medicine, being neither a part of the teaching syllabus at medical schools nor elements of the standard procedures in hospitals.

As mentioned, the medical establishment has no unified approach to UMT. It seems that in Poland the majority of physicians is critical of these methods. As a result, patients seldom consult physicians about whether or not to use UMT, and they do not take into account professional opinion in their risk assessments. We therefore lack objective data as to the risks related to UMT and, if they exist, this information seldom reaches the patient. Sources of information are usually informal ones, such as popular magazines, oral traditions, or the therapists themselves.

An interesting issue which has not yet been discussed in literature is what the decisive factors are in patients' risk assessment of UMT. Considering that while making a decision as to the use of UMT one cannot be sure of the result, risk assessment is the key factor in the decision process. The aim of the study is to define the risk perception of UMT, comparing the qualitative and quantitative risk assessments of healthy people with those of patients suffering from cancer or allergy.

Material and Methods

In order to define risk perception, a so-called psychometrical paradigm proposed by Fischoff and developed by Slovic was applied [4–7]. According to this model it is assumed that risk, by definition, is multidimensional and its assessment depends not only on the probability and magnitude of the result, but also on many other factors, such as the ability to control the situation, distance in time, reversibility, awareness of negative consequences, knowledge, fear related to particular events, the availability of alternative solutions, and the like. Overall evaluation of the level of risk is the product of combining partial assessments. Quantitative parameters of risk were measured according to the "Scale of Risk Perception of UMT" designed by the author of the project. The scale consists of 14 bipolar (present/absent, high/low, etc.) dimensions of risk perception: knowledge about UMT, fear of UMT, probability of worsening of health condition as a result of UMT, positive experiences associated with UMT, influence on the effectiveness of UMT, reversibility of results, understanding the influence of UMT on body function, possibility to replace UMT with conventional treatment, certainty of the influence of UMT on body function, predictability of the negative consequences of UMT, considerable improvement in health resulting from UMT, rapid effects of the applied therapym, availability of information regarding UMT.

Thirteen unconventional methods of treatment were studied according to the 14 quantitative dimensions of risk perception. The subjects of the study assessed the risk level of each therapy according to their own subjective criteria. In order to determine differences in risk perception of UMT, a selection of therapies that belong to the categories below were taken into account. The National Center of Complementary and Alternative Medicine (NCCAM) at the US National Institutes of Health has divided unconventional methods of treatment into five categories: 1) alternative medical systems: theories and practices which come from different cultural circles, such as Chinese or Ayurvedic medicine, or were developed within Western medical culture, for example homeopathy; 2) mind and body medicine: methods based on the assumption that there is interaction between the psyche and body function. Some of the therapies in this category have already become standard practice in conventional treatment, e.g. self-help groups, meditation, visualization, and therapies focused on emotional expression, such as dance, art therapy, and music therapy; 3) biologically based therapies: methods using natural drugs, such as herbal therapies, vitamin therapies, and different kinds of diets; 4) manual therapies: manipulative methods, such as osteopathy, chiropractic, and massage; 5) energy-based therapies: methods based on the concept of bio-energy, such

as reiki, bio-energy therapy, and bio-electromagnetic methods, for example magnetic therapy.

The methods examined within the research project together with their definitions as given to the subjects of the study were: acupuncture: putting needles into certain points of the body; aurotherapy: examining and influencing the electric field of the human body; homeopathy: giving small doses of certain substances which in larger amounts would produce symptoms in healthy people similar to those of the disease; megavitamin therapy: huge doses of vitamins and microelements; herbal therapy: based on herbs and plant mixtures which are not included in the official drug register; relaxation: creating a psycho-physical balance by calming strong emotions and thoughts; chromotherapy: taking lamp treatment, staying in rooms painted in recommended colors, and even eating and drinking products of recommended coloring; visualization: creating an imaginary picture of one's immune system fighting against the causative agent of the disease; bio-energy therapy: transmission of bio-energy from the healer to the patient; chiropractic: therapy involving manipulation of the spine; litho-therapy: method involving direct contact with certain elements of some metals and stones; hydrotherapy: use of water, internally and externally; and magnetic therapy: a method based on the use of magnetic fields produced by magnets.

Similarly as in other studies of UMT [3, 8], some of the practices examined here are psychotherapy techniques or physical therapy methods. Selected were those therapies which are relatively available (data collected on the Health and Oddities Fair in Wroclaw) and popular [9].

The study comprised 292 individuals divided into three groups. The first group (PA) consisted of 78 patients hospitalized on the allergy ward of the Clinic of Internal Diseases and Allergology, Wrocław Medical University; the second group (PN) comprised 49 patients hospitalized at the Lower Silesian Oncology Center, and the third (OZ) consisted of 165 students: 80 first-year medical students and 85 second- and third-year students of the Technical University of Wroclaw.

Results

Risk perception of UMT was low in all groups examined. In ill individuals, biased information processing about UMT and a tendency to diminish its risk level was presupposed. Although differences in risk assessment between the healthy and the ill were not observed in all the therapies examined, when such differences did occur the risk perception of healthy individuals was higher in most cases (Table 1). Exceptions to this rule were hydrotherapy and relaxation: the healthy individuals assessed these two methods as less risky than did the patients from the allergy ward. The risk perception of other UMT, such as homeopathy, megavitamin therapy, herbal therapy, magnetic therapy, bio-energy therapy, and lithotherapy, was higher in healthy individuals than in allergy or oncology patients. Differences in risk perception between the two groups of patients also occurred. Patients suffering from allergy showed higher risk perception of lithotherapy, magnetic therapy, hydrotherapy, and bio-energy therapy than the patients on the oncology ward. To conclude, patients from the oncology ward showed the lowest risk perception of UMT and healthy individuals the highest.

Due to the high correlations between the dimensions of the "Scale of Risk Perception of UMT", more general criteria of the assessment were singled out. Other researchers who did studies according to the psychometric paradigm [4, 5, 10–13] proceeded in a similar manner. In almost all studies performed according to this model there were such a correlations. The aim of the analysis of the results of this model was to single out fundamental cognitive categories essential to the perception of certain phenomena [13]. To single out these hypothetical factors of higher order, principal factor analysis was performed. Because of the scree plot and the essential meaning of the solution, a four-factor solution was applied. Since there was no reason to assume that the obtained factors are orthogonal, Promax rotation was used to rotate the factor solution. After rotation, the first factor accounted for 34% of the variance and the other factors 17.4%, 9.1%, and 6.7%. Together they accounted for 67.2% of the total variance.

The first factor, explaining the highest percentage of the total variability, is strongly represented by: level of fear, probability of deterioration of health condition, irreversibility of the results, and unpleasant experience. Because all these dimensions describe negative consequences and emotions accompanying UMT, it was defined as "fear of negative consequences". The second factor was strongly represented by: understanding the influence, range of knowledge, influence on the body and, to a lesser extent, availability of information. This factor, based in one's beliefs and opinions, was defined as "knowledge". The third factor was primarily represented by the dimensions referring to the one's influence on the effectiveness, time period needed to produce good results, and the possibility to predict negative consequences of UMT. This factor was defined as

Table 1. Comparison of the mean assessments of overall subjective risk of UMT between the OZ, PN, and PA groups. *Post hoc* test with the NIR method (N = 292)

Tabela 1. Porównanie średnich ocen dla ogólnego subiektywnego ryzyka NMT między OZ, PN i PA. Test *post hoc* metodą NIR (N = 292)

Therapy (Terapia)	Differences between means: OZ and PN (Różnica między średnią dla OZ i PN)		Differences between means: OZ and PA (Różnica między średnią dla OZ i PA)		Differences between means: PN and PA (Różnica między średnią dla PN i PA)	
	difference (różnica)	*p* (istotność)	difference (różnica)	*p* (istotność)	difference (różnica)	*p* (istotność)
Homeopathy (Homeopatia)	0.55	0.023	0.20	0.324	–0.37	0.198
Megavitamin therapy (Terapia megawitaminowa)	0.81	0.001	0.93	0.001	0.12	0.645
Herbal therapy (Ziołolecznictwo)	0.70	0.003	0.47	0.019	–0.23	0.380
Magnetic therapy (Magnetoterapia)	0.55	0.023	–0.10	0.616	–0.65	0.016
Bioenergy (Bioenergoterapia)	0.63	0.020	–0.18	0.430	–0.81	0.008
Lithotherapy (Litoterapia)	0.35	0.146	–0.32	0.117	–0.67	0.013
Hydrotherapy (Hydroterapia)	0.18	0.427	–0.50	0.008	–0.68	0.007
Relaxation (Relaksacja)	–0.16	0.44	–0.44	0.024	–0.28	0.276

OZ – healthy people.

PA – patients of the allergy ward.

PN – patients of the oncology ward.

OZ – osoby zdrowe.

PA – pacjenci oddziału alergologicznego.

PN – pacjenci oddziału onkologicznego.

"control". The fourth factor was strongly represented by the predictability of deterioration of the health condition as a result of UMT and small probability of improvement and, to a lesser extent, irreversibility of the results and the possibility of replacing UMT with conventional therapy. This factor depicts low expectations as to positive results and a strong belief that UMT may be harmful and was defined as "ineffectiveness".

The structure obtained in exploratory factor analysis was verified by confirmatory analysis. In the course of the latter, the factor model, which combines the particular position with the factor obtained, was evaluated. Thus, confirmatory factor analysis served as the goodness-of-fit test.

The first figure shows the path diagram of the confirmatory factor analysis. Parameter scores were estimated with the method of least squares in AMOS 5.0. The figure depicts the model with the parameters fitting the data best. Confirmatory factor analysis proved the accuracy of the four-factor solution. In the analysis of the relation between the isolated factors isolated and the essential variables, factor scores calculated with the regression method available in SPSS are used.

The research procedure was planned so as to answer the question whether there were any differences in risk perception of UMT between individuals with different health statuses. Variance analysis performed in the three groups showed that such differences did exist. Patients on the oncology ward evaluated their knowledge and possibility of control of the course and results of treatment as insufficient ($p < 0.05$ and $p < 0.001$, respectively), but in comparison with healthy individuals they saw UMT as more effective ($p < 0.001$). Patients on the allergy ward presented a similar point of view as to the good results of UMT and their knowledge, but they were more afraid of the negative consequences of UMT ($p < 0.05$) and the possibility of control ($p < 0.001$). Patients on the allergy ward differed from patients on the oncology ward only in their assessment of the ineffectiveness factor, i.e. the oncology patients saw UMT as more effective ($p < 0.05$).

The position of each UMT with regard to the separate factors allowed constructing maps of UMT perception. The location of the particular UMT for the ineffectiveness and control factors in patients suffering from cancer and healthy individ-

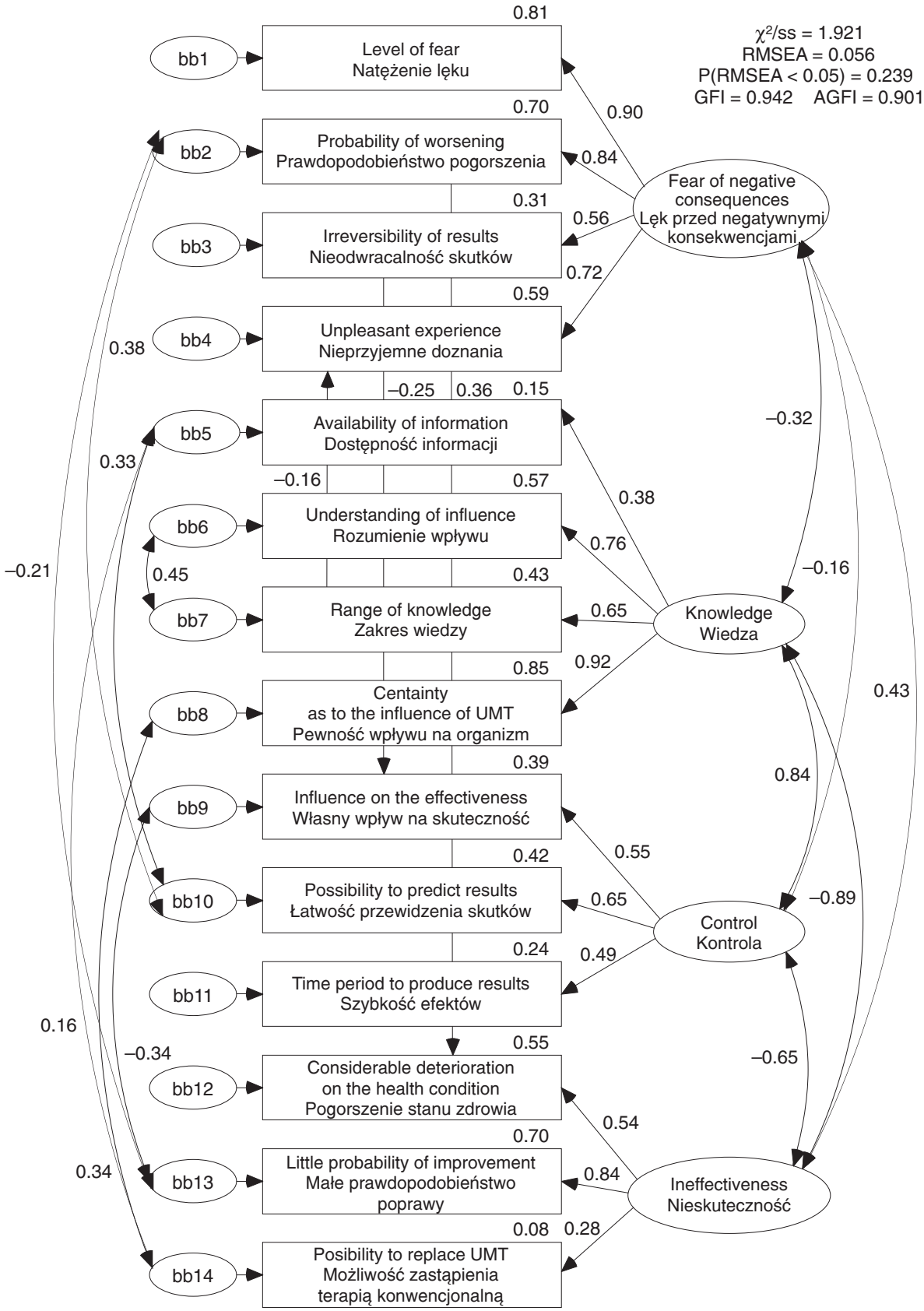

Fig. 1. Confirmatory factor analysis of the Scale of Risk Perception of UMT (n = 292)

Ryc. 1. Konfirmacyjna analiza czynnikowa „Skali Percepcji Ryzyka NMT" (n = 292)

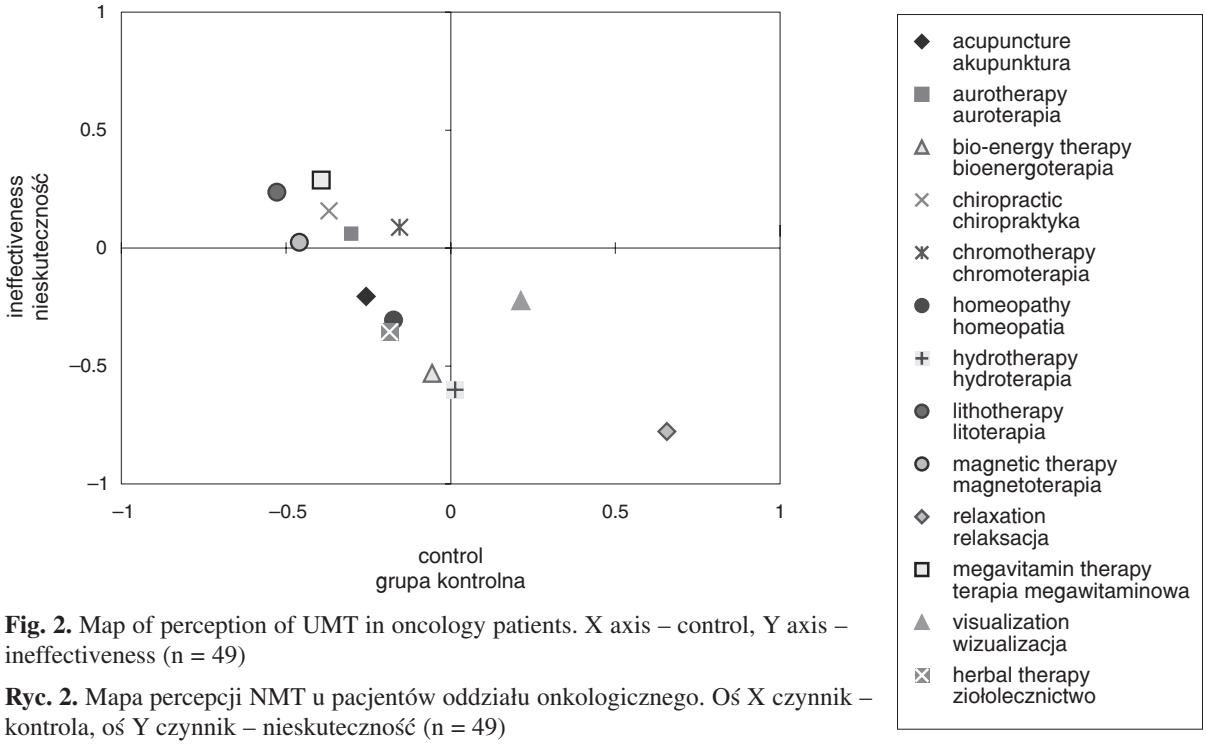

Fig. 2. Map of perception of UMT in oncology patients. X axis – control, Y axis – ineffectiveness (n = 49)

Ryc. 2. Mapa percepcji NMT u pacjentów oddziału onkologicznego. Oś X czynnik – kontrola, oś Y czynnik – nieskuteczność (n = 49)

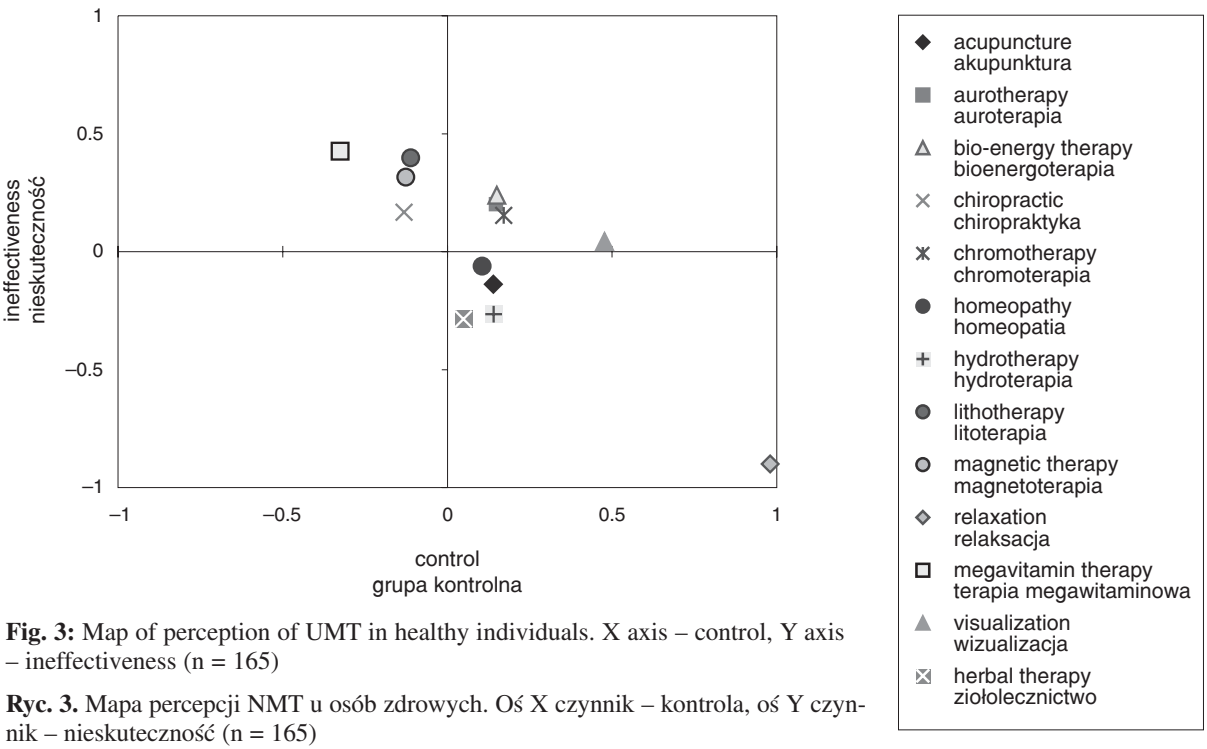

Fig. 3: Map of perception of UMT in healthy individuals. X axis – control, Y axis – ineffectiveness (n = 165)

Ryc. 3. Mapa percepcji NMT u osób zdrowych. Oś X czynnik – kontrola, oś Y czynnik – nieskuteczność (n = 165)

uals are shown on the Figures 2 and 3. The reason these two groups were selected is that the differences between them were the most striking. The horizontal (X) axis shows control and the vertical (Y) axis ineffectiveness. The higher on the Y axis, the more ineffective and harmful the therapy was according to the subject examined. The further right on the X axis, the greater influence on the course of treatment and the results. Comparing these two schemes, one can observe a rightwards shift of the results in Figure 3 (healthy individuals), which indicates that healthy people clearly feel more in control over the therapy than oncology patients do. A shift of the results upwards shows that healthy individuals see UMT as less effective than do the oncology patients.

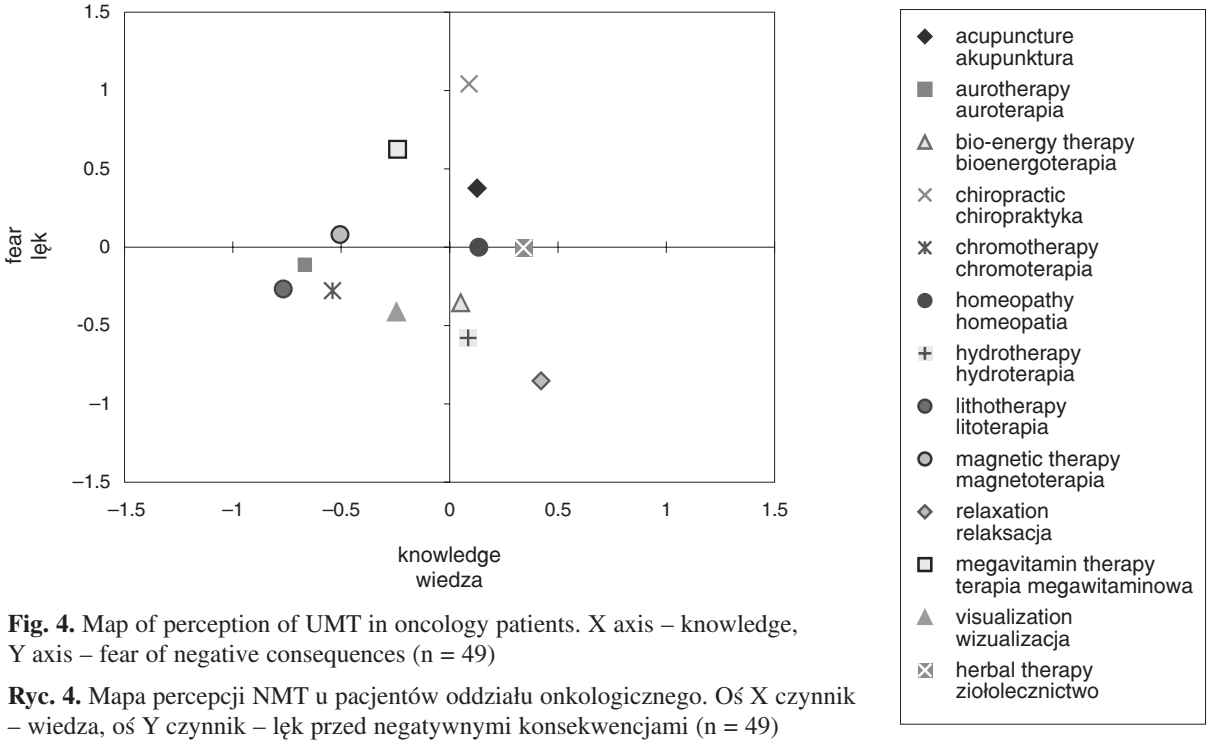

Fig. 4. Map of perception of UMT in oncology patients. X axis – knowledge, Y axis – fear of negative consequences (n = 49)

Ryc. 4. Mapa percepcji NMT u pacjentów oddziału onkologicznego. Oś X czynnik – wiedza, oś Y czynnik – lęk przed negatywnymi konsekwencjami (n = 49)

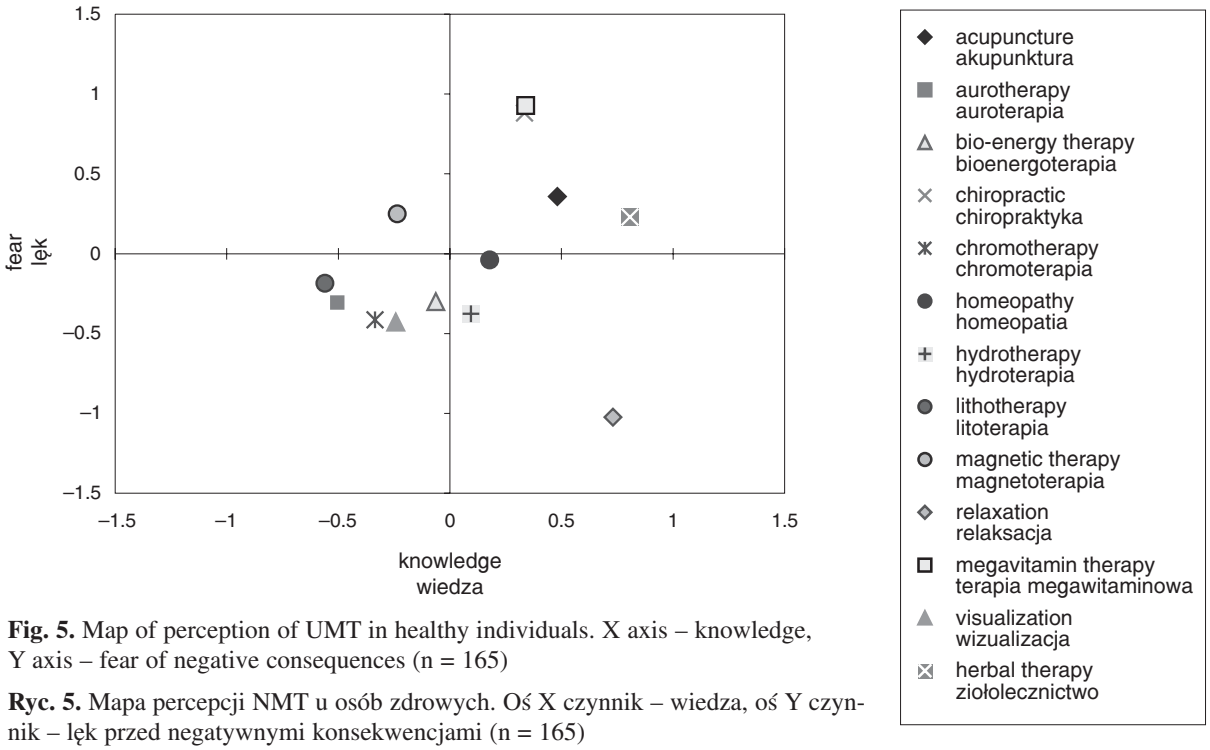

Fig. 5. Map of perception of UMT in healthy individuals. X axis – knowledge, Y axis – fear of negative consequences (n = 165)

Ryc. 5. Mapa percepcji NMT u osób zdrowych. Oś X czynnik – wiedza, oś Y czynnik – lęk przed negatywnymi konsekwencjami (n = 165)

Figures 4 and 5 show the positions of each UMT examined regarding the factors knowledge and fear of negative consequences in patients suffering from cancer and healthy individuals. The rightwards shift of the results in healthy people illustrates their assessment of better knowledge of UMT compared with the oncology patients.

Discussion

The results of the study allow the conclusion that the highest risk perception of UMT is shown by healthy individuals and the lowest by the patients on the oncology ward. It seems that in a state of illness, particularly a lethal one, the risk perception threshold is lowered (the acceptance

threshold is increased). The studies of H. Kunreuther and G. Wright (quoted by [14]) showed that the perception and acceptance of risk depend on the point of reference.

The lower risk perception in the ill may be related to wishful thinking; some individuals, willing to use UMT, tend to reduce the risk involved when assessing UMT. Thus the differences in risk assessment are probably the result of the different approaches of the healthy and the ill. In ill individuals we can observe the so-called actor attitude [15], in which processing information is shortened and biased. Typical of this approach is the use of confirmatory strategies that are to prove a given hypothesis and which are based on cases that meet the precondition of the hypothesis. What is then taken into account is whether the particular therapies can help, and not whether they can be harmful or how effective they are. Ill individuals, convinced that UMT could help, process information regarding these therapies only partially and tend to diminish the risk involved.

The use of confirmatory strategies by hospitalized patients was also observed in their assessments of isolated factors of UMT perception. Healthy individuals and hospitalized patients differed in their opinion on UMT. The most striking differences were observed between healthy people and those hospitalized because of cancer. In comparison with the group of healthy subjects, those hospitalized on the oncology ward considered both their knowledge of UMT and the possibility to control the course and the results of treatment to be insufficient; nevertheless, they regarded UMT as more effective than the healthy persons did. Indeed, the patients on the oncology ward assessed UMT as more effective not only in comparison with the healthy individuals, but also with the patients hospitalized on the allergy ward. This result supports the hypothesis that the information processing in this group of patients is somehow partial. Serious disease seems to shape their negative self-assessment (little knowledge, lack of control of the situation), but at the same time the actor's attitude helps to create a more optimistic approach as to the effectiveness of UMT. This is probably the result of positive inclination, which nurtures wishful thinking. The actor's attitude influences information processing according to the confirmatory strategy, i.e. searching for information that could prove the given hypothesis. In this case it means focussing on information in favor of UMT and ignoring or diminishing the importance of information regarding its ineffectiveness.

The results of the study help us to understand what factors people take into account in assessing the risks of UMT. One of the most important outcomes of the study is the conclusion that there is a general low risk perception of UMT. In the light of reports of the possible undesirable effects of UMT, these being the result of the therapy itself or interaction with other drugs administered and/or the resignation from conventional methods of treatment, it is clear that neglecting the risk involved may bring about dangerous consequences. It seems necessary to inform patients about the negative effects of UMT. Information about risk related to UMT should not be limited to quantitative parameters and data regarding the probability of advantageous or disadvantageous results of treatment. This is not only due to the fact that most people are not really familiar with processing information presented as probabilities of results [14, 16], but also because risk assessment is based on qualitative parameters. Thus, the qualitative dimensions of risk perception of UMT discussed in this paper could be used in media information campaigns and by doctors.

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