

Bridging the Gap in Mental Health Approaches between East and West: The Psychosocial Consequences of Radiation Exposure

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Mental health professionals in Western countries and the Confederation of Independent States (CIS), the former Soviet Union) have been examining the social and psychological consequences of the 1986 Chernobyl nuclear accident on the people who lived or are living in the exposed areas. Based on reviews of the literature, papers from international conferences, and communication between researchers in various countries, different perspectives have emerged on classifying distress and disorders and designing treatment programs. The origins of these differences lie in philosophical, historical, and political developments in the West and the CIS. These different approaches often have made it difficult for mental health professionals from the CIS and the West to work together. The goal of this paper is 2-fold: to identify and recognize the main differences in these approaches and to propose specific solutions for bridging the gap. The basic approach of mental health professionals in the CIS is a physiological, nosological one—it focuses on the etiology of the illness. Although their main diagnostic tool is the *International Classification of Diseases, 10th Revision*, it has undergone adaptations that reflect the Soviet medical and physiological attitude toward psychiatry. These changes have resulted in the abrogation and addition of disorder categories. For example, in the CIS edition of the *ICD-9*, there is no mention of post traumatic stress disorder as a distinct disorder. In contrast, in the West, the dominant approach is a symptomatic, phenomenologic one. Emphasis is placed on a dynamic understanding of the disorder and treatment is conducted by mental health professionals (psychologists, social workers, psychiatrists). This contrasts with the approach used in the CIS, where psychological distress often is somatized and treatment undertaken by physicians rather than mental health professionals. The authors of this paper call on researchers to come together and work jointly on the recognition and resolution of these differences. Then both groups will be able to offer concrete solutions and build tools that can benefit both sides. It is hoped that these new approaches will receive worldwide recognition and prove useful for other mental health professionals working with persons affected by the accident at Chernobyl. — *Environ Health Perspect* 105(Suppl 6):1551–1556 (1997)

Key words: Russian, psychiatric approaches, PTSD, Chernobyl, technological disasters, mental health outcomes, liquidators, central nervous system, somatic complaints

Introduction

The is general consensus that the Chernobyl nuclear accident caused widespread adverse psychologic effects among the exposed population. However, there is little clarity or agreement about how to

handle this extensive psychosocial morbidity. Some work has been done by the United Nations Educational, Scientific and Cultural Organization and local psychiatric institutions to deal with the problems, but

understanding these efforts is hampered by lack of a common working language among mental health professionals. The purpose of this paper is to identify the difficulties facing Western researchers interested in working with investigators from the Confederation of Independent States ([CIS]), the former Soviet Union) and to offer possible solutions to overcome these difficulties. In addition, we note major trends and approaches that appear in the CIS literature.

After the Chernobyl accident in 1986, researchers throughout the world joined in the quest for knowledge about the effects of radiation on the exposed population and the need for a common language emerged. As a rule, the professionals from the West tried to teach those from the East; little knowledge was transmitted from the opposite direction. This happened despite the fact that much valuable information has been amassed in the CIS over the years.

A researcher from the West interested in learning from his or her counterparts in the CIS must first overcome a number of technical difficulties. To begin with, most CIS articles are not translated into English and are not published in Western journals. At best, Western researchers succeed only in obtaining abstracts of work undertaken. Second, most literature from the CIS is not associated with a computerized database such as a CD-ROM. In the CIS articles are frequently exchanged at the personal level, often at conferences or when the CIS investigator sends reports to his or her peers. As a result, the West has a selective and inconsistent understanding of research that has been done in this area in the CIS. This is especially true of researchers who are just beginning to study the area. However, Western researchers have more serious problems than these when they attempt to use Russian mental health materials. For example, lacking a comprehensive understanding of the psychiatric world in the CIS, most researchers have a difficult time understanding the few articles that have reached the West.

Differing Classification Systems

This paper is based on a literature list that we feel is far from complete. In spite of this obvious drawback, we believe we have uncovered a number of important issues that need clarification. The first issue, which is central, is the discrepancy that

This paper is based on a presentation at the International Conference on Radiation and Health held 3–7 November 1996 in Beer Sheva, Israel. Abstracts of these papers were previously published in *Public Health Reviews* 24(3–4):205–431 (1996). Manuscript received at *EHP* 18 April 1997; accepted 19 June 1997.

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Abbreviations used: ARS, acute radiation sickness; CIS, Confederation of Independent States (former Soviet Union); CNS, central nervous system; DSM, *Diagnostic and Statistical Manual*; GHQ, General Health Questionnaire; ICD, *International Classification of Diseases*; IES, Impact of Events Scale; NTC, national traditional classification; PTSD, post traumatic stress disorder; SCL, Symptom Classification List.

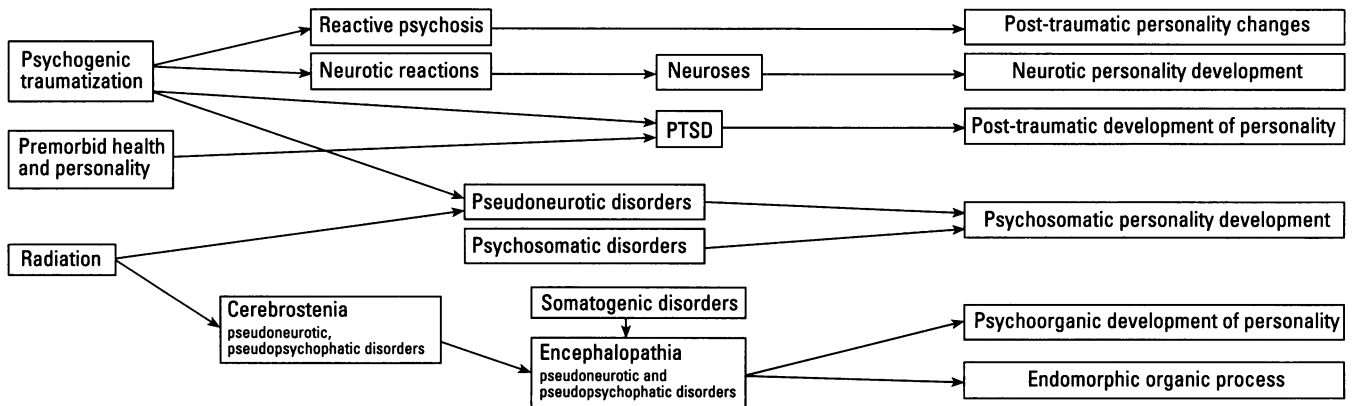


Figure 1. Diagnoses of psychological disorders related to the Chernobyl nuclear accident. Adapted from Napreyenko and Logahanovsky (1).

exists between the West and the CIS in their use of classification systems of mental disorders and the terminology used. At first glance, the classification systems seem quite similar. The information that the western researchers receive is that the *ICD-9 (International Statistical Classification of Diseases, Ninth Revision, World Health Organization)* has been accepted for use in the CIS since 1978. In 1995, CIS investigators began using the *ICD-10*. However, a closer look reveals differences that are expressed in many ways.

These differences are discussed by Napreyenko and Logahanovsky (1) (Figures 1–3). In this paper, the authors tried to present the entire spectrum of diagnosed disorders in the exposed population after the Chernobyl accident. As we can see in Figure 1, they used categories of the National Traditional Classification (NTC) and compared them to the accepted categories of the *ICD-9* and *ICD-10*. Examples of diagnoses that represent the NTC include post-psychotic personality changes and neurotic, post traumatic, psychosomatic, and psychoorganic personality development. These diagnoses appear on the right-hand side of Figures 1 to 3. The NTC, as we understand, is a psychiatric perspective used by doctors in the CIS and is comprised of the accumulated knowledge available.

In articles aimed solely at CIS researchers, there is evidence that the scientific writing is strongly influenced by the NTC approach. This classification is based mainly on the famous neurophysiologic work of I.P. Pavlov, S.S. Korsakoff, and V.M. Bechterov. Both East and West share the incorporation of biologic and genetic research. This is in contrast with the psychological theories that underlie Western

mental health approaches, which combine the work of S. Freud (psychodynamic), B.F. Skinner (operant behaviorism), and A. Maslow (humanistic perspective).

Figure 1 shows some examples of these classification differences. For example, Napreyenko and Logahanovsky discuss vegetative dystonia (autonomic nervous system dysfunction), which is categorized under pseudoneurotic disorders and appears in Figure 2. This disorder is the most frequently reported in Russian literature [e.g., (2)]. In the West, no such category exists. Napreyenko and Logahanovsky suggest that this disorder is comparable to a category called Unspecified Disorders of Autonomic Nervous System, Code 337.9 in the *ICD-9*. From personal conversations with Russian mental health professionals, we understand that this diagnosis refers to various types of physical and neurologic symptoms that may be psychogenic in origin. It appears to include a wide variety of symptoms rather than being specific. Besides the differences in the NTC and the *ICD-9*, a difference also exists between the *ICD-9* and the *ICD-10*. This is because in the latter, the Unspecified Disorders of the Autonomic Nervous System category no longer exists, but is partially covered by the group Somatoform Autonomic Dysfunction (F45.3-35, including cardiovascular, gastrointestinal, respiratory, genitourinary, and other organ systems). These subcategories are not mentioned specifically in the Figures. In the West (mainly in the United States and recently in Israel), the classification system of the *DSM-IV (Diagnostic and Statistical Manual, American Psychiatric Association)* is used. It is important to note that the *DSM* and the *ICD* are not identical. In two versions of the *DSM*, the category Somatoform Autonomic Dysfunction

does not exist; there is only Somatoform Disorders (see Figure 3).

In sum, we understand from CIS investigators that they use the *ICD* classification system basically for diagnoses intended for official purposes or when collaborating with Western mental health professionals. In therapy, CIS mental health professionals apparently employ widely used terms and categories from the old Russian classifications based on national traditions. These are used with greater frequency than the *ICD*. In Russia, there is a much stronger emphasis on the nosologic approach, which is an etiologic approach. That is, there is strong emphasis on placing each symptom in a category in which there is a clear relationship between cause and symptom. Vegetative dystonia is only a partial example of this approach because it is viewed as a syndrome and does not use the nosologic approach. On the other hand, this category often is the diagnosis of choice when an external environmental cause is identified. In addition, there is emphasis on understanding which mechanism is responsible for specific illnesses. The West, by comparison, places much more emphasis on symptoms and the approach is a phenomenologic one. This distinction explains the impression gained from reading the literature that Western researchers tend to define disorders on their psychological basis, whereas CIS investigators tend to look for a physiologic basis.

For example, in the *ICD-9* there is a category called Physiological Malfunction Arising from Mental Factors (306.X). In practice, both this diagnosis and the category Unspecified Disorders of the Autonomic Nervous System describe similar symptoms; however, the etiology is different. Code 337.9 includes biologic as well

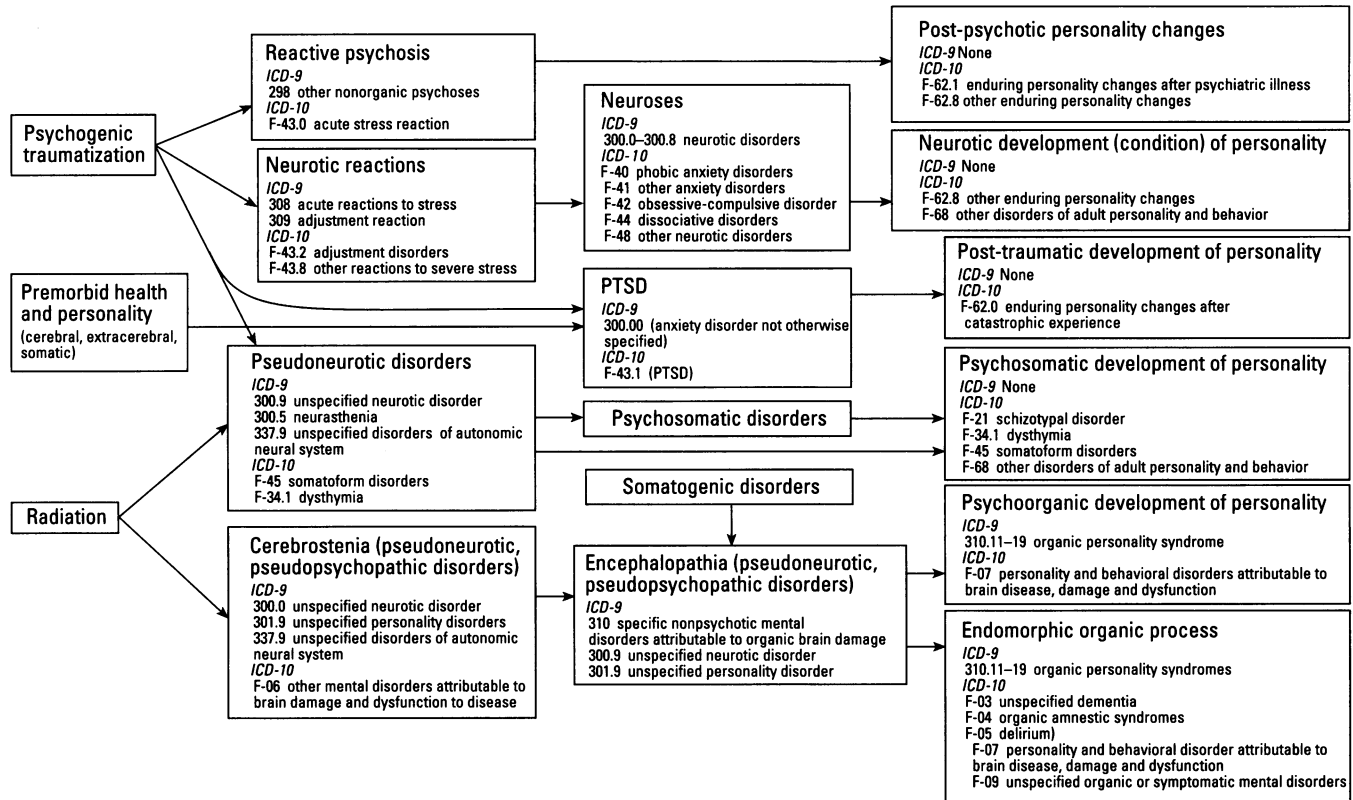


Figure 2. Diagnoses of and ICD-9 and ICD-10 codes for psychological disorders related to the Chernobyl nuclear accident. Adapted from Napreyenko and Logahanovsky (1).

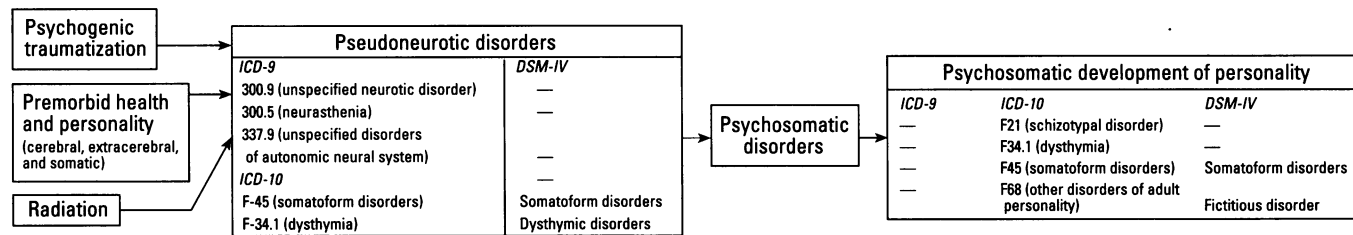


Figure 3. Example of psychological disorders related to the Chernobyl nuclear accident and ICD-9, ICD-10, and DSM-IV codes. Adapted from Napreyenko and Logahanovsky (1).

as psychological factors. It seems that CIS researchers use the category that includes biologic factors. A second example comes from Code 316.X—Psychic Factors, Associated with Physical Disease, Classified Elsewhere, which is an example of a disorder that could be understood on the phenomenologic level and is suitable for the description of the symptoms associated with the Chernobyl accident. However, this category was excluded from the adaptive CIS ICD-9. These examples support the conclusion that for investigators in the CIS, the ICD is adapted to their mental health theories and categories that do not fit into this approach are excluded.

Changes that have been made in the Russian version of the ICD-9 include not only exclusions but also extensions. In the English version of the ICD-9 (Code 300.9), there is a category called Unspecified Neurotic Disorders. In the modified CIS version of the ICD-9, there is a category called Unspecified Neurotic Disorder and Pseudo-neurotic Condition due to Exogenic Etiologic Factors (3). In the English version the only code is 300.9. By contrast, in the modified version this code is extended to 300.92-99. The modified CIS categories (ICD-9, Russian modification) are presented below, with their modified ICD-9 codes:

- Intoxication, 300.92
- Systemic infection, 300.93
- Somatic non-infectious disease, 300.94
- Metabolic disorder, 300.95
- Menopause, 300.96
- Involution, 300.97
- Other (nonspecified), 300.98
- Other (unknown), 300.99

When Western researchers begin work in this field, they may mistakenly believe that the CIS is using the same ICD-9 classification system as they are. The Russian version of ICD-10 is a much closer fit to the Western version. However, as we have shown, there are many differences. We do not recommend negating the CIS system,

nor do we expect CIS researchers to abandon their rich tradition, do away with their classifications, and adapt the Western version of the *ICD*. However, we do recommend that researchers working together should openly discuss their different practices and perspectives, as they must understand and interpret their research findings based on some common ground. This is especially important when categories of one system do not appear in the classification scheme of another system. As a consequence, it often is impossible to compare research results because researchers are looking at different disorders.

One of the disorders discussed frequently in Western literature and which is associated with technologic disasters is post traumatic stress disorder (PTSD). We use this disorder as an example of the changes and trends taking place in 1990s CIS scientific publications concerned with the Chernobyl accident. These changes, we assume, are partly the result of joint research undertaken on the consequences of the Chernobyl accident by researchers from the CIS and from the West. There is no doubt that the PTSD category is important for analysis of the psychologic consequences of technologic catastrophes and has received much attention in the literature since its introduction as an independent diagnostic category in the 1980 *DSM-III*. Over the years, the category has been redefined and enlarged (*DSM-III-R* in 1987; *DSM-IV* in 1994). Despite methodologic arguments about whether invisible stressors such as those diagnosed as a result of the Chernobyl accident should be included under this disorder, PTSD was included when assessments were made. By contrast, in Soviet and CIS publications before 1993, PTSD did not appear as a diagnosis. This is because up until 1993, as mentioned previously, the *ICD-9* (which did not include PTSD) was used. PTSD appeared in the *ICD-10* in 1994 and was accepted in the CIS in 1995. In addition, in the NTC other kinds of disorders and symptoms were emphasized in place of PTSD. When reports began to be published from the joint work of Western and Russian groups working with the *DSM-III*, PTSD began being mentioned (4). Since the beginning of the 1990s CIS investigators have included PTSD when undertaking research on their own, and it has become a major trend in their work (5,6).

Rumyantseva and colleagues (6) report of a cohort consisting of 632 adult respondents aged 16 to 60 who applied for

psychotherapeutic help between 1992 and 1994 because of neurotic complaints. All the respondents came from the high-exposure area of Novozybkov (Bryansk region). They were examined individually by a psychiatrist who used instruments including the Symptom Classification List (SCL-50) (7), the General Health Questionnaire (GHQ-28) (8), a list of stressors, and the Impact of Events Scales (IES) (9). The results of the Rumyantseva et al. (6) study showed that 58% of the cohort had at least one PTSD symptom (61% females and 39% males) and 8% were diagnosed as suffering from clinical PTSD.

Tarabrina, in collaboration with American Colleagues, (10) examined 46 liquidators who participated in cleaning the reactor after the Chernobyl accident during the period 1986 to 1988. The liquidators were examined by using the imagery method suitable for measurement of specific PTSD physiologic responses. The respondents were divided into two subgroups according to *DSM-III-R* criteria. The researchers employed the following instruments: Questionnaire of Mental Imagery (11), Mississippi PTSD Scale (12), IES, Minnesota Multiphasic Personality Inventory (13), Spielberger Anxiety Scales (14), SCL-90-R (15), and the Beck Depression Inventory (16). Thirteen liquidators were diagnosed as having PTSD and 26 fell within the norm on the intrusion and avoidance scales. There was no difference between the two groups on physiologic reactivity. It was concluded that unlike survivors of war trauma, the survivors of the invisible traumatic stressors of the Chernobyl accident showed none of the abnormally high physiologic reactivities typically elicited by recall of psychic trauma.

The above were two examples of CIS research that used both Eastern and Western instruments. This trend toward cooperation between the East and West demonstrates that there now exists a real possibility to develop a more unified psychologic approach and to make comparisons between populations that left the CIS for the United States or Israel and populations that remained in the CIS.

A psychologic basis is one of the most important factors in pathogenesis. However, there is no consensus about the mechanisms that produce psychologic symptoms. Although some researchers believe that somatic and aesthetic signs have a psychogenic (psychologic) etiology, others claim that symptoms such as aesthenia

(a decrease in functioning), cognitive disorders, pain symptoms, and other neurologic symptoms may be the result of low doses of radiation influencing the nervous system or the beginning of organic diseases caused by exposure of the central nervous system (CNS) to radiation (a biologic etiology) (17).

Somatic disorders have been found with greater frequency among liquidators, (those who took part in cleanup operations at the Chernobyl reactor site) and have been reported by Nyagu (18). Evidence of somatic symptoms among those living in areas contaminated with radiation is contradictory and therefore still controversial. Many Russian authors fully recognize the influence of psychologic factors; however, they continue to focus on the pathophysiologic disorders of the nervous system. Zdesenko (19) presented an analogy with the syndrome of direct damage to the CNS observed in clinics of acute radiation sickness (ARS). This indicates that for high and middle levels of radiation, effects on the CNS are part of the whole clinical picture of ARS. The picture is less clear for low levels of radiation. However, Zdesenko assumes that some CNS damage is possible. In a collaborative paper by the Research Institute of Psychiatry (Moscow) and the Moscow State University Department of Psychology (Moscow), Khomskaya et al. (20) reported findings concerning the neuropsychologic investigation of persons involved in the cleanup after the Chernobyl disaster. The researchers examined cognitive, motor, emotional, and personality characteristics of liquidators during the 1986 to 1997 period. Neuropsychologic effects were apparent in all spheres studied. The most typical neuropsychologic syndromes were diencephalic, diencephalic frontal, and diencephalic right hemisphere. Khoukaya et al. (20) concluded that the psychiatric changes found indicated the presence of stable organic changes in the brain functions of the Chernobyl liquidators. These changes are characterized by a mild clinical picture and a pronounced vegetative problem, but the changes cannot be considered to have only psychologic origins. In these studies, as in others, it is difficult to evaluate the validity of the results because information is missing on research design and methods.

Summary of Russian Psychologic Studies of the Chernobyl Disaster

In evaluating the quality of Russian research on the effects of exposure to radiation in

and after the Chernobyl accident, it should be emphasized that most studies have not been published in Western peer-reviewed journals. Therefore, in considering these findings one must keep in mind the methodologic caveats. However, for Western researchers it is helpful to review the main findings published in Eastern bloc professional literature.

In commemoration of the 10th anniversary of the Chernobyl accident, Rumyantseva et al. (21) and Havenaar (22) summarized the main findings of CIS investigators. The earliest publications on the mental health aspects of the disaster appeared in 1987 to 1988 (23,24). Rumyantseva heads the leading Russian research group (25,26) that has also collaborated with Western psychiatric investigators [e.g., Havenaar (22)]. The results were summarized as follows:

- Contradictory information that circulated after the accident from both formal and informal sources increased stress levels among the exposed populations. Because of insufficient information or no information at all, there were peak levels of stress disorders in 1989. Stress levels peaked again in 1993 because of exaggerated reports about the health consequences of the Chernobyl accident, and hopes rose about the possibility of receiving financial compensation.
- In areas exposed to radiation, radiation exposure was perceived to be the most dangerous risk compared to other social and economic risks.
- The level of stress symptoms was significantly higher in exposed areas than in unexposed areas (1.5 times more) among evacuees (increased from 40 to 62% between 1993 and 1995) and among liquidators (some type of psychologic disorder was diagnosed in 84% of the liquidators, which was 3 times higher than those diagnosed among the exposed population).
- Among populations in exposed areas compared with control populations, the most frequent symptoms were somatic-functional—somatization in the form of different kinds of pains, senestopathias (unclear or bizarre sensations), and parastheses (irregular sensations according to the intensity of stimulus). Somatic reactions were more often observed than depression and phobic reactions as expression of distress.
- A greater prevalence of sickness behavior (more complaints, decreased subjective evaluation of health, increased

visits to physicians, increased medication use) was also observed among exposed compared to comparison populations. High levels of health-focused anxiety were found more often in exposed populations than in non-exposed populations.

- So-called radiophobia was not found. The level of psychosis was unchanged by the accident.
- The most popular assessment instrument used was the 28-item version of the GHQ.
- High-risk groups included mothers with young children (born after 1987), physicians, and educators.

Maladaptation clearly was present; however, it was difficult to reach a consensus about the ways it produced psychologic symptoms. Although some researchers believe that somatic and neurologic symptoms are psychogenic (psychologic) in origin, others claim that symptoms such as nervous system dysfunction, cognitive disorders, and pain may be the effect of low doses of radiation on the nervous system or the beginning stages of organic diseases.

Rumyantseva (25) considered the characteristic psychologic patterns that occurred in persons living in contaminated areas who were exposed to extreme stress due to the Chernobyl accident. These were neuropsychologic syndromes such as anxiety, aesthenia, somatoform, hysteria, and obsessive and affective disorders (25). In the last few years, however, the most commonly reported of the neurotic syndromes were aesthenia and vegetative dystonia.

In summary, the types of disorders reported by CIS researchers as being the most frequent lie in the range of the neuroses and reactive psychologic states. In traditional Russian psychiatry these are called pseudoneurotic disorders and are similar to neurotic disorders on the phenomenologic level; however, they are biologic or environmental in origin. That physicians and educators are among the high-risk groups for symptoms and psychologic distress raises questions about how health risks are being presented to the population, as physicians and educators come into contact with large numbers of affected persons. Furthermore, they are in pivotal positions in formulating health and social policy (whether to eat certain foods, whether to spend time outdoors, whether to leave the area if possible) for individuals and families in their care. Perhaps more effort should be made to

inform these people about the current state of research on Chernobyl-related health risks.

One of the most interesting findings for us was that CIS investigators emphasized psychologic and physiologic phenomena that can be described as a combination of minor symptoms which cannot be clustered under one diagnostic label. It is easier to treat a patient when a clear diagnosis exists. In the case of Chernobyl, it often is difficult to make such a clear diagnosis and as a result, many people suffering from these disorders remain without treatment. Available standard tests cannot define their symptoms as typically neurologic, internal, psychiatric, or orthopedic. Many of the people who came from the exposed regions fall into this category. To the best of our knowledge, this point is not emphasized enough in Western publications that deal with the consequences of the Chernobyl accident.

What we can learn from the psychiatric approach used in the CIS is that professionals adhere to a multidisciplinary approach when treating people exposed to the Chernobyl accident. This approach typically combines clinical psychology, psychotherapy, neurology, internal medicine, and orthopedics (27–29). We are not recommending that Western therapists adopt this type of specialization; however, we do feel that this multidisciplinary approach could be adopted so that a joint discussion of a person's symptoms could be undertaken by health professionals working together in a clinic. This approach would solve the problem of disjointed information concerning the patient and, hopefully, provide a fuller picture of his or her status. In the West, treatment of chronic pain is handled this way. Therefore, in our opinion, such an approach could be used in treatment and diagnosis of persons exposed to radiation in the Chernobyl nuclear accident.

Conclusions

Western researchers face difficulties in trying to learn from the Russian experience with psychologic consequences among populations exposed in the Chernobyl accident. Recognizing the unique aspects of the Russian approach and being receptive to the interests of Russian specialists in integrating into Western science, it becomes feasible to find ways to overcome the difficulties inherent in two different cultures coming together to conduct research.

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