

Department of Radiology, Medical University of Lublin
Department of Adult Psychology, Catholic University of Lublin

ELŻBIETA CZEKAJSKA-CHEHAB, ANDRZEJ DROP,
WIESŁAWA OKŁA

Satisfaction and stress factors in the radiologist's profession

Professional work is extremely important in adult life and in social occupations it often constitutes its basis. The level of work-related commitment and satisfaction strongly affects the health of care providers and results of their actions for others. Lazarus in his definition of stress demonstrated the role of both the objective features of the object and the way of perceiving it by the subject. Stress is understood here as 'the defined relation between the individual and his environment assessed as a burden or found to be exceeding the individual's abilities and endangering his well-being' (1,5). This means that the human being and environment are dynamically related and interacting with each other. The type of response to the stressor does not depend so much on the stressor itself but on the way the person evaluates it. As a result of cognitive evaluation conducted by the subject the situation may be perceived as positive, indifferent or stressful; moreover the possibilities of coping with stress are assessed.

Appley defines stress as 'the conditions of the organism in which the organism recognizes that his wellbeing is endangered and that all his powers should be focused on self-protection (1,4). During his life, the human being acquires the coping abilities and skills which are used to fight stress or tension effectively by solving problems. When the coping skills fail or they are completely used, the next stages of stress reactions develop, which disclose various levels of ineffective coping behaviors leading finally to exhaustion and different forms of pathologies.

Once this model of stress is accepted, it becomes obvious that its sources are both internally and externally conditioned. They may come from the environment as well as from the personality traits and strategies of coping used by the individual, and these variables are strictly correlated with personality features (7,8). A high level of stress is always associated with the medical profession, however, its intensification may depend on the nature of work and the range of personal responsibilities. The reports on professional satisfaction and stress factors in medical professions (6,11,12) are widely available, however, only a few concern radiology (2, 3, 9, 10).

The aim of the study was to collect the opinions of radiologists on positive and negative aspects of their specialty, work-related stress and satisfaction and to link the findings with the level of professional burnout.

METHODS

The questionnaire studies were conducted in a group of 70 radiologists of the Lublin region (46 women and 24 men) in 2001. The length of work in this group ranged from 1 to 33 years

(average 11.7 years as a physician and 11 as a radiologist). In the analysis of the findings, three groups were distinguished using the criterion of the 10-year period of work as a radiologist. The questionnaire together with the Burnout Scale Inventory by Steuden and Okła (13) were filled in anonymously and consisted of 4 groups of questions concerning personal data, conditions of work, workload, causes of stress and sources of professional satisfaction. The responders were to choose from the suggested elements or give their own answers and to define the level of their effects using the 4-degree scale (0–1 low, 1.01–2.00 moderate and 2.01–3.00 high).

The intensification of individual factors in the whole group was calculated in relation to the maximum value taking into consideration sex and work period. The general professional satisfaction was evaluated using the dichotomic method similar to the one used by Crewson et al. (2). It was assumed that the radiologists fully satisfied with their work were those who declared their satisfaction and claimed that they would choose the same specialty again. The structure of the group was assessed according to the frequency and intensity of satisfying and stressful factors mentioned by the radiologists. The relations between the findings and the intensification of structural factors of burnout were examined. The data correlation or their differences were determined using the non-parametric tests (Spearman, Kuskal-Wallis).

RESULTS

CONDITIONS OF WORK

Among the 70 radiologists examined, 53 (75.7%) evaluated their conditions of work as good or very good, 16 (22.8%) – as average and only 1 as bad. The reported workload significantly varied – from 10 to 200 opinions (descriptions of pictures, US, CT, MR and vascular examinations). These results were treated tentatively and due to the specificity of individual examinations were difficult to analyze comparatively. Two radiologists routinely used 4 imaging methods out of those mentioned above, 31 – three of them, 34 – two and 1 – only one. None of them, which is probably associated with the organization conditions in our region, performed all types of examinations. For 68 persons the main workplace was the hospital (including 10 persons employed by the Medical University), only for 2 – the outpatient department. Twelve radiologists were employed only in one place, 33 (47.1%) had one additional job, 17 (24.4%) – two, 6 (8.5%) – three, 1 person – four and another 1 – six. Forty (57.1%) radiologists defined their contacts with the physicians ordering examinations and the possibilities of gaining information about patients as easy, the rest of them found them difficult. Fifty one (72.9%) radiologists found the range of their professional self-dependence to be satisfactory, 18 – sufficient and only one – too low.

PROFESSIONAL SATISFACTION

Professional satisfaction, according to the dichotomic criterion accepted by us, the work-related satisfaction was positive in 56 (80%) radiologists. The direct question was answered 'yes' by 38 (54.2%) physicians, 'rather yes' by further 28; 4 (5.7%) answered 'no'. Among 14 individuals who would choose some other profession, 10 would select the non-medical one.

The questionnaire included 16 examples of work-related satisfaction sources given/chosen by the authors on the basis of their knowledge on this specialty; additionally, the radiologists were asked to list other factors which determine their work-related satisfaction. The sources of satisfaction most frequently mentioned by the radiologists (88.6%) were the situations confirming their diagnoses. Therefore, the most satisfactory element of their work is the sense of professionalism and positive confirmation of their competence by other specialists using the radiologists' diagnoses. The further three sources of satisfaction among radiologists include the feeling that the work performed is meaningful (84.3%), awareness of their own competence (82.9%) and possibilities of self-dependent diagnosis (81.4%). About $\frac{3}{4}$ of the radiologists found their satisfaction in high independence, appreciation shown by superiors, possibilities to improve

their qualifications and appreciation shown by physicians of other specialties. As regards the maximum value for the whole group (Tab.1), only one factor – confirmed diagnoses – exceeded 66% accepted as the border value for the high level.

The majority of satisfaction sources listed in the questionnaire reached the moderate level (from 39 to 62% of the maximum value) at the frequency ranging from 60 to 80%. The salaries and possibilities of changing work were rarely chosen as the sources of satisfaction (frequency about 20%, level about 10% of the maximum value. The results about the sources of professional satisfaction and their levels in relation to the length of work as radiologists are presented in Table 1.

Tab.1. The sources of professional satisfaction among radiologists with regard to the length of work

| Satisfaction source | No. (% of the group) | Average level (% of max) | Results according to the work length | | |
|-------------------------------------------------------|----------------------|--------------------------|--------------------------------------|--------------------|--------------------|
| | | | 1 – 9 years | 10-19 years | from 20 years on |
| | | | average (% of max) | average (% of max) | average (% of max) |
| Confirmed diagnoses | 62 (88.6) | 2.11 (70.5) | 2.24 (74.7) | 2.05 (68.3) | 1.94 (64.6) |
| Sense of meaningful work | 59 (84.3) | 1.70 (56.7) | 1.70 (56.6) | 1.67 (55.6) | 1.75 (58.3) |
| Awareness of competence | 58 (82.9) | 1.74 (58.1) | 1.42 (47.5) | 1.86 (61.9) | 2.25 (75.0) |
| Self-dependence in diagnosing | 57 (81.4) | 1.86 (61.9) | 1.61 (53.5) | 2.10 (69.8) | 2.06 (68.8) |
| High professional independence | 53 (75.7) | 1.70 (56.7) | 1.24 (41.4) | 2.14 (71.4) | 2.06 (68.8) |
| Appreciation shown by superiors and co-workers | 53 (75.7) | 1.51 (50.5) | 1.30 (43.4) | 1.76 (58.7) | 1.63 (54.2) |
| Possibilities to improve qualification | 53 (75.7) | 1.60 (53.3) | 1.91 (63.6) | 1.38 (46.0) | 1.25 (41.7) |
| Appreciation shown by physicians of other specialties | 50 (71.4) | 1.39 (46.2) | 1.30 (43.4) | 1.14 (38.1) | 1.88 (62.5) |
| Interesting courses | 48 (68.6) | 1.30 (43.3) | 1.52 (50.5) | 1.05 (34.9) | 1.19 (39.6) |
| Patient's trust | 47 (67.1) | 1.34 (44.8) | 1.30 (43.4) | 1.29 (42.9) | 1.50 (50.0) |
| Possibilities of additional earnings | 47 (67.1) | 1.26 (41.9) | 0.97 (32.3) | 1.62 (54.0) | 1.38 (45.8) |
| Modern diagnostic equipment | 46 (65.7) | 1.44 (48.1) | 1.70 (56.6) | 1.05 (34.9) | 1.44 (47.9) |
| Perspectives of professional development | 42 (60.0) | 1.17 (39.0) | 1.45 (48.5) | 0.95 (31.7) | 0.88 (29.2) |
| Education of younger co-workers | 36 (51.4) | 0.83 (27.6) | 0.33 (11.1) | 0.95 (31.7) | 1.69 (56.3) |
| High salaries | 16 (22.9) | 0.39 (12.9) | 0.30 (10.1) | 0.33 (11.1) | 0.63 (20.8) |
| Easy changes of workplace | 14 (20.0) | 0.26 (8.6) | 0.27 (9.1) | 0.24 (7.9) | 0.25 (8.3) |

CAUSES OF RADIOLOGY-RELATED STRESS

The most frequently mentioned sources of stress (over 90%) and the most severe ones were low salaries and haste in conducting the duties (Tab. 2). Almost equally frequently the radiologists listed-lack of information about patients, fear of misdiagnosis, lack of time for themselves and

Tab.2. The sources of stress among radiologists with regard to the length of work

| Stress source | No. (% of the group) | Average level (% of max) | Results according to the work length | | |
|--------------------------------------------------|----------------------|--------------------------|--------------------------------------|--------------------|--------------------|
| | | | 1 – 9 years | 1 – 9 years | 1 – 9 years |
| | | | average (% of max) | average (% of max) | average (% of max) |
| Low salaries | 67 (95.7) | 2.49 (82.9) | 2.45 (81.8) | 2.86 (95.2) | 2.06 (68.8) |
| Haste | 65 (92.9) | 2.23 (74.3) | 2.09 (69.7) | 2.62 (87.3) | 2.00 (66.7) |
| Lack of sufficient information about patients | 59 (84.3) | 1.63 (54.3) | 1.64 (54.5) | 1.76 (58.7) | 1.44 (47.9) |
| Fear of misdiagnosis | 57 (81.4) | 1.90 (63.3) | 1.94 (64.6) | 1.95 (65.1) | 1.75 (58.3) |
| Lack of proper equipment | 53 (75.7) | 1.43 (47.6) | 1.21 (40.4) | 1.81 (60.30) | 1.38 (45.8) |
| Excessive duties | 51 (72.9) | 1.40 (46.7) | 1.15 (38.4) | 1.67 (55.6) | 1.56 (52.1) |
| Service-like character towards other specialties | 51 (72.9) | 1.71 (57.1) | 1.39 (46.5) | 2.10 (69.8) | 1.88 (62.5) |
| Lack of time for themselves and families | 50 (71.4) | 1.54 (51.4) | 1.36 (45.5) | 1.95 (65.1) | 1.38 (45.8) |
| Too high responsibility | 46 (65.7) | 1.43 (47.6) | 1.55 (51.5) | 1.19 (39.7) | 1.50 (50.1) |
| Frequent diagnostic difficulties | 45 (64.3) | 0.94 (31.4) | 1.21 (40.4) | 0.76 (25.4) | 0.66 (20.8) |
| Bad organization in work | 44 (62.9) | 1.03 (34.3) | 1.00 (33.3) | 1.33 (44.4) | 0.69 (22.9) |
| Exposure to radiation | 42 (60.0) | 1.14 (38.1) | 1.33 (44.4) | 1.33 (44.4) | 0.50 (16.7) |
| Poor perspectives of promotion | 42 (60.0) | 1.03 (34.3) | 1.03 (34.3) | 1.19 (39.7) | 0.81 (27.1) |
| Unequal distribution of duties | 38 (54.3) | 0.99 (32.9) | 0.82 (27.3) | 1.48 (49.2) | 0.69 (22.9) |
| Permanent contact with severely ill patient | 30 (42.9) | 0.63 (21.0) | 0.64 (21.2) | 0.67 (22.2) | 0.56 (18.8) |
| Under appreciation by superiors | 30 (42.9) | 0.87 (29.0) | 0.85 (28.3) | 1.29 (42.9) | 0.38 (12.5) |
| Work monotony | 30 (42.9) | 0.63 (21.0) | 0.58 (19.2) | 0.81 (27.0) | 0.50 (16.7) |
| Difficulties in specializing | 30 (42.9) | 0.87 (29.0) | 1.27 (42.4) | 0.76 (25.4) | 0.19 (6.3) |
| Lack of bonds with patients | 28 (40.0) | 0.66 (21.9) | 0.42 (14.1) | 1.10 (36.5) | 0.56 (18.8) |
| Bad relations with co-workers | 26 (37.1) | 0.56 (18.6) | 0.39 (13.1) | 0.95 (31.7) | 0.38 (12.5) |
| Too low self-dependence | 16 (22.9) | 0.29 (9.5) | 0.24 (8.1) | 0.38 (12.7) | 0.25 (8.3) |

their families, poorly equipped units and the service character of their work. The intensification of the majority of these negative factors was within the moderate or low range. The least stressful factors reported by the radiologists included monotony of work, bad relations with co-workers, lack of strict contacts with patients and permanent contacts with the severely ill patients. No significant differences were observed on evaluating the relations between stress and satisfaction findings among the radiologists in relation to sex. There was also no correlation between the length of work and intensification of stressors, although the highest values were found in the radiologists working for 10 to 19 years.

The relation between the level of stressors and professional burnout syndrome was found to be significant ($p < 0.0001$). Moreover, the negative correlation was observed between the presence of burnout syndrome and such sources of satisfaction as the feeling that the work is meaningful, possibilities of scientific development and appreciation shown by the physicians of other specialties. Furthermore, the calculated difference between individual indices of stress and satisfaction was significantly correlated with the presence of professional burnout syndrome.

DISCUSSION

In the mid 90s, two research projects were carried out, in which the work-related sources of stress and satisfaction were assessed among radiologist (2,3,10). Both the English and American findings show a relatively low level of work-related satisfaction in this group of specialists.

Graham et al. (3,10) in their comparative studies concerning several medical specialties showed that the profession of radiologists is the least satisfactory one. The most stressful aspect of this specialty is the work overload. Other sources of stress include inadequacies in current staffing and facilities and complaints about funding. The most relevant source of satisfaction for radiologists is appreciation of their work shown by the co-workers. The authors suggest that in order to decrease the risks of burnout syndrome the actions should be undertaken to reduce the stress felt by radiologists and to increase their satisfaction.

Crewson et al. studying a large group of American radiologists demonstrated that the number of radiologists satisfied with their job decreased from 65 to 51% during the 5-year period which was evaluated. Moreover, 41% said they liked working in radiology less than they did 5 years ago. The reasons for their decreased satisfaction were mainly in heavy workloads, experience with workplace discrimination and increased administrative duties and government involvement. It was found that radiologist' perceptions of the effect of managed care on their practice had more influence on professional satisfaction than did its administrative intrusions or the actual percentage of managed care patients in their practice. Slightly higher satisfaction reported by a small number of radiologists was mainly associated with work environment, relations with co-workers and new technology (2).

Our studies demonstrated a very high level of professional satisfaction among the radiologists of our region. The frequency of professional satisfaction expressed by them – 80% – is significantly higher than in American and English radiologists (3, 10). The most commonly mentioned sources of satisfaction were confirmed diagnoses, the feeling that their work is meaningful, awareness of competence, self-dependence in diagnosing and high professional independence. A slightly lower level of satisfaction in our group was connected with appreciation shown by co-workers and physicians of other specialties. A substantially higher level of satisfaction was observed among the radiologists working for more than 10 years, which resulted from professional independence and self-dependence, patients' trust and possibilities to educate young co-workers. The most common sources of satisfaction among the youngest radiologists included: possibilities to improve their qualifications, perspectives of professional development and interesting courses.

Similarly to other studies (8,9,11,12), our findings revealed that the relevant and major sources of stress included the external factors resulting from such work organization in which

excessive duties and activities were not compensated by the salaries which would provide stabilization (over 90% of the examined radiologists pointed to low salaries, haste and lack of sufficient information about patients). This stress was also related to the lack of time for themselves and family life. The second group of stress sources were internal factors, i.e. those directly associated with professional practicing as a doctor. The fear of misdiagnosis did not depend on the length of work and was the stress source for about 80% of the examined population. Similar frequency and intensity of stress resulted from the feeling of service-like nature of their work compared to other specialties and too high responsibilities connected with diagnosing. Unlike many other medical specialists, the radiologists rarely said that the stress source was related to contacts with severely ill patients (6, 9, 11, 12).

In conclusion, despite low salaries and work overload, the radiologists examined by us constitute a group characterized by high levels of professional satisfaction, professionalism, responsibilities for patients and strong motivation. The awareness of their competence, the feeling that their work is meaningful and high professional independence may be the factors protecting them against negative effects of the work-related stress.

CONCLUSIONS

1. The radiologists are most highly satisfied with the confirmed diagnoses, the feeling that their job is meaningful, independence and awareness of their competence.

2. The most stressful factors in radiological profession include: too low salaries, haste during examination, fear of misdiagnosis and lack of sufficient information about patients.

3. There is a strict correlation between the level of stress factors and the risk of professional burnout syndrome among the radiologists.

REFERENCES

1. Biela A.: Stres w pracy zawodowej. Wyd. KUL, Lublin 1999.
2. Crewson P. E. Sunshine J. H.: Professional satisfaction of U. S. radiologists during a period of uncertainty. *Radiology*, 213, 589, 1999.
3. Graham J. et al.: Job stress and satisfaction among clinical radiologists. *Clin. Radiol.*, 55, 182, 2000.
4. Heszen-Niejodek I.: Człowiek w sytuacji stresu. Problemy teoretyczne i metodologiczne. Wyd. Uniw. Śl., Katowice 1996.
5. Lazarus R. S.: Paradygmat stresu i radzenia sobie. *Now. Psych.*, 3-4, 2, 1986.
6. Matrunoła P.: Is there a relationship between job satisfaction and absenteeism? *J. Adv. Nurs.*, 23, 827, 1996.
7. Okła W., Steuden S.: Psychologiczne aspekty zespołu wypalenia. *Rocz. Psych.*, 1, 120, 1998.
8. Okła W., Steuden S.: Strukturalne i dynamiczne aspekty zespołu wypalenia w zawodach wspierających. *Rocz. Psych.*, 2, 5, 1999.
9. Polworth E.: Occupational stress and the radiographer. *Radiol. Technol.*, 54, 91, 1982.
10. Ramirez et al.: Mental health of hospital consultants: the effects of stress and satisfaction at work. *Lancet*, 347, 724, 1996.
11. Richardsen A. M., Burke R. J.: Occupational stress and job satisfaction among physicians – sex differences. *Soc. Sci. Med.*, 33, 1179, 1991.

12. Sęk H.: Wypalenie zawodowe. PWN, Warszawa 2000.
13. Steuden S., Okła W.: Tymczasowy podręcznik do Skali Wypalenia Sił (SWS). Wersja eksperymentalna. Wyd. KUL, Lublin 1999.

SUMMARY

The aim of the study was to find out the opinions of radiologists concerning their work, sources of satisfaction and professional stress factors and to assess their relationship with the professional burnout syndrome. The study was conducted in the group of radiologists of the Lublin region using the questionnaire prepared by the authors and the Burnout Scale Inventory by Steuden and Okła. In the group of 70 radiologists, 75.7% found their conditions of work to be good and very good, 82.9% had at least one additional job and 72.9% defined their professional independence as satisfactory. Full professional satisfaction was declared by 80% of the radiologists. The most common sources of professional satisfaction (75.7–88.6%) listed were self-dependence in diagnoses and their clinical confirmation, the feeling that their job was meaningful, awareness of their own competence and appreciation shown by superiors and co-workers. The causes of work-related stress given by the radiologists included low salaries (95.7%), haste (92.9%), lack of sufficient data about patients (84.3%) and fear of misdiagnosis (81.4%). The study evaluated the incidence and level of individual factors in relation to the length of work. A correlation was found between the majority of stress sources listed by the radiologists and the professional burnout syndrome.

Stres i satysfakcja w zawodzie radiologa

Celem pracy było uzyskanie opinii radiologów na temat warunków pracy, źródeł satysfakcji i czynników powodujących stres w pracy zawodowej oraz ocena ich związku z występowaniem zespołu wypalenia zawodowego. Badania przeprowadzono w grupie radiologów województwa lubelskiego za pomocą przygotowanego przez autorów kwestionariusza oraz kwestionariusza Skala Wypalenia Sił autorstwa Steuden i Okły. Spośród 70 badanych 75,7% oceniło swoje warunki pracy jako dobre i bardzo dobre, 82,9% miało poza głównym miejscem pracy przynajmniej jedno źródło dodatkowego zarobkowania, 72,9% określiło zakres swojej samodzielności zawodowej jako satysfakcjonujący. Pełne zadowolenie z wykonywanego zawodu podało 80% ankietowanych radiologów. Najczęściej wymienianymi przez badanych źródłami satysfakcji zawodowej (75,7-88,6%) była samodzielność w stawianiu rozpoznań i fakt ich klinicznego potwierdzenia, poczucie sensu wykonywanej pracy, świadomość swoich kompetencji oraz uznanie ze strony przełożonych i współpracowników. Jako przyczynę stresu wiążącego się z wykonywanym zawodem radiolodzy podawali najczęściej niskie zarobki (95,7%), pośpiech (92,9%) oraz brak dostatecznej informacji o chorych (84,3%) i obawę przed błędem diagnostycznym (81,4%). W pracy oceniono występowanie i poziom poszczególnych badanych czynników w zależności od stazu pracy. Stwierdzono korelację większości wymienianych przez radiologów źródeł stresu z występowaniem zespołu wypalenia zawodowego.