International Journal of Occupational Medicine and Environmental Health, Vol. 12, No 4, 295–303, 1999

ORIGINAL PAPERS

MEDICAL CAUSES OF FEMALE SICKNESS ABSENCE DURING ECONOMIC TRANSITION IN POLAND*

JANUSZ A. INDULSKI and ZUZANNA SZUBERT

Department of Epidemiology
The Nofer Institute of Occupational Medicine
Łódź, Poland

Key words: Absenteeism, Sickness absence, Female sick leave

Abstract. The current transformation of property relations and economic restructuring, along with many other factors, influence the health condition of workers. The present study was undertaken to investigate the trends in the rate and causes of female sickness absence during the period of economic transition in Poland, based on the absence analysis in one of the largest (before the process of restructuring) plants of the motor car industry. Vital for the current trends in the workers' absenteeism is the reduction in the rate of employment. The group investigated was composed of 3215 women and 5373 men employed during the years 1989–94. The main variable examined was the reason for the worker's discharge: (1) quitting the job because of health problems, (2) retirement, (3) termination of work contract due to economic problems of the plant, (4) change of affiliation agreed between the former and present employers. The structural transformations in the plant under study brought about the discharge of about 77% of workers during the period between 1989 and 1994, mostly owing to the termination of work contracts for economic reasons, and earlier retirement. The increase in the rate of sickness absence involved to a higher extent female workers; it amounted to 30% compared to 12% for male workers. Among the workers quitting employment, the rate of sickness absence was twice as high as that for the workers still under employment. The largest differences were noted for the female population; they concerned cardiovascular diseases, neoplasms and complications of pregnancy, delivery and the puerperium.

The economic transformation processes make a considerable impact on the occurrence of sick absenteeism in workplaces. Workers leaving their jobs because of health problems, as well as those discharged for economic reasons belong to the highest risk group.

*This paper was presented at the International Conference on Medical and Ecological Problems of Workers' Reproductive Health, Moscow, Russia, 9–10 December 1998.

Address reprint requests to Z. Szubert, D.Sc. Department of Epidemiology, The Nofer Institute of Occupational Medicine, P.O. Box 199, 90-950 Łódź, Poland.

INTRODUCTION

The essential socio-economic transformations which Poland has been undergoing since the early 1990s entail major restructuring of the administration and functions of large industrial plants. The changing (socio-economic) conditions, along with the present situation on the job market, exert a considerable influence on the workers' health condition, which is reflected by the rate of sickness absence (4,5,11,12). Vital for the current trends in the workers' absenteeism is the reduction in the rate of employment, reported by the Finnish authors (8,14).

The present study was undertaken to investigate the trends in the rate and causes of female sickness absence during the period of economic transition in Poland, based on the absence analysis in one of the largest (before the process of restructuring) plants of the motor car industry.

MATERIALS AND METHODS

The subjects were 3215 female and 5373 male workers employed in the motor car industry plant between1989 and 1994. The population studied comprised two groups of workers:

- those employed until 1994, and
- those discharged during the study period.

Over the years, the population sample has gradually decreased to the level of 37% of the original size. The highest rates of discharge were noted in 1994 (37%), 1991 (31%) and 1990 (21%) (Fig. 1). The main variable examined was the reason for

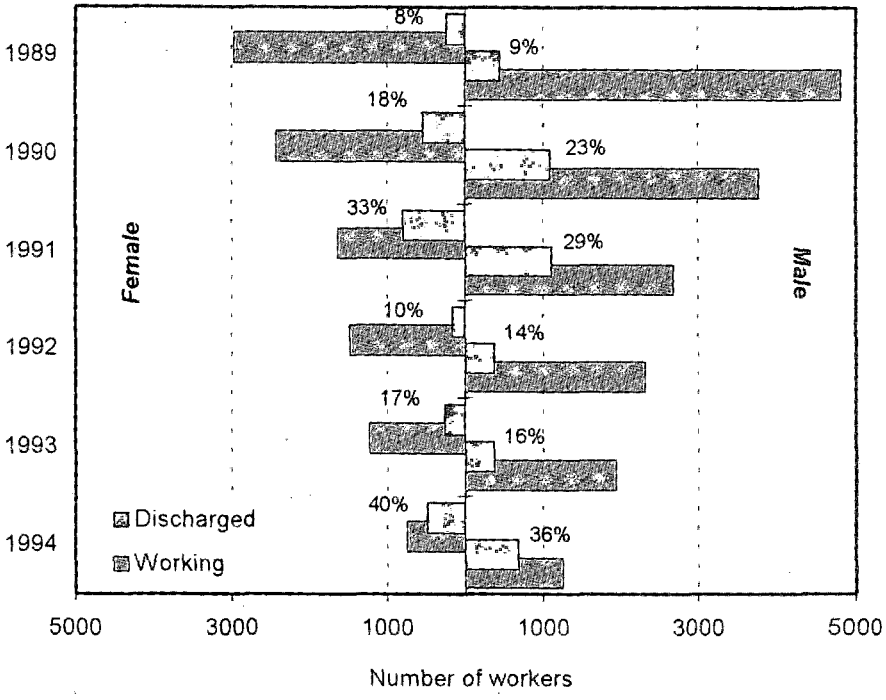

Fig. 1. Female and male populations examined in 1989–94.

the worker's discharge. There were four of them: (1) quitting the job because of health problems, including long-term sickness and disability pension; (2) retirement, including earlier retirement for economic reasons; (3) termination of work contract due to economic problems faced by the plant; and (4) change of affiliation agreed between the former and present employers.

In the group of 2476 females who had left their job, two causes of discharge prevailed: retirement (47% in 1989, and 67% in 1990) and termination of work contract for economic reasons (72% in 1991, 76% in 1993 and 90% in 1994 of all causes of discharge). The highest (16%) rate of discharge due to long-term sickness or disability pension was recorded in 1992.

The data on medical causes of absence and duration of work disability were collected for individual workers employed in the plant between 1989 and 1994. The causes of worker's discharge were also traced.

The following parameters of sickness absence were considered:

(a) lost time rate (LTR) calculated as the ratio between the number of days of work disability and the number of working days during that particular period,

$$\text{LTR} = \frac{\text{Number of days of work disability}}{\text{Number of workers} \bullet \text{number of days within the study period}} \cdot 100;$$

(b) percentage of the sick in terms of the proportion of workers accounting for sickness absence from a particular cause;

(c) mean yearly duration of absence per 1 worker.

To compare the absence in particular subgroups the lost time rate was standardized by age.

RESULTS

During the period under study the age structure of both the male and female workers changed. A tendency towards quitting the job could be observed among the youngest and oldest workers. A 10% decrease in the proportion of workers aged 20–29, a high increase in the percentage of male (by 31%) and female (by 15%) workers aged 40–49 and a similar level of female workers in the 30–39 age group were noted (Table 1).

Table 1. The female and male populations examined by age and gender

Age groups	Female				Male			
	1989		1994		1989		1994	
	n	%	n	%	n	%	n	%
–19	36	1.1	–	–	127	2.4	–	–
20–29	567	17.7	71	5.8	801	15.2	119	6.1
30–39	1198	37.3	321	26.2	1425	27.0	521	26.8
40–49	782	24.4	680	55.4	1233	23.4	807	41.6
50–59	600	18.7	155	12.6	1468	27.8	488	25.2
60–	28	0.8	–	–	220	4.2	6	0.3
Total	3211	100.0	1227	100.0	5274	100.0	1941	100.0

In the period 1989–94 the lost time rate in the plant examined was found to increase by 20%. For the groups of male and female subjects this increase amounted to 12% and 30%, respectively. The female sickness absence was by approximately 33% higher than the male one, with the largest difference of 53% recorded in 1994. That year the lost time rate for female workers reached the value of 9.91. The highest increase rate of sickness absence was due to the following medical causes: endocrine and metabolic disorders, mental disorders, nervous system diseases, cardiovascular diseases.

Our analysis revealed significant changes in the structure of the major medical causes of absence. Until 1992 the complications of pregnancy, delivery and the puerperium accounted for the highest (26%) rate of sickness absence among female workers, and respiratory diseases (30%) among male workers. In 1994 these rates fell down to 14 and 24%, respectively. A noteworthy observation was a steady increase in the sickness absence due to cardiovascular diseases in both populations – from 17% to 26% in males and from 10% to 17% in females. A similar tendency was also observed for the nervous system diseases, increase from 16% to 19% and from 8% to 11%, respectively. A high percentage of genitourinary diseases, 9% in 1994, among the causes of female sickness absence could also be noted (Table 2).

Table 2. Main causes of sickness absence in 1989 and 1994 (precentage of total sickness absence)

	Female		Male	
	1989	1994	1989	1994
1	complications of pregnancy diseases 25.7	respiratory system diseases 18.5	respiratory system diseases 30.5	cardiovascular diseases 24.8
2	respiratory system diseases 25.3	cardiovascular diseases 17.2	cardiovascular diseases 17.1	respiratory system diseases 23.6
3	cardiovascular diseases 9.8	complications of pregnancy diseases 13.9	nervous system and sense organs diseases 15.9	nervous system and sense organs diseases 18.7
4	nervous system and sense organs diseases 7.6	nervous system and sense organs diseases 11.3	gastrointestinal diseases 9.9	gastrointestinal diseases 11.3
5	musculoskeletal system diseases 7.2	musculoskeletal system diseases 10.3	musculoskeletal system diseases 9.6	musculoskeletal system diseases 10.2

The growing rate of sickness absence during the study period was rather associated with longer annual duration of work disability per 1 worker than with an increased incidence rate in the population. In 1989, the number of days of sickness absence per 1 worker amounted to 43 for females and 33 for males, while in 1994 this number increased to 49 and 38 days, respectively. At that time, the proportion of the sick among females fell down from 63% to 57% and among males the decrease was even higher – from 59% to 49%.

Among females, the highest increase in the yearly duration of absence per 1 worker was due to complications of pregnancy, delivery and the puerperium (by 25 days), cardiovascular diseases (by 23 days), gastrointestinal diseases (by 20 days) and nervous system diseases (by 10 days). The percentage of the sick was found to increase slightly only for cardiovascular diseases (Fig. 2).

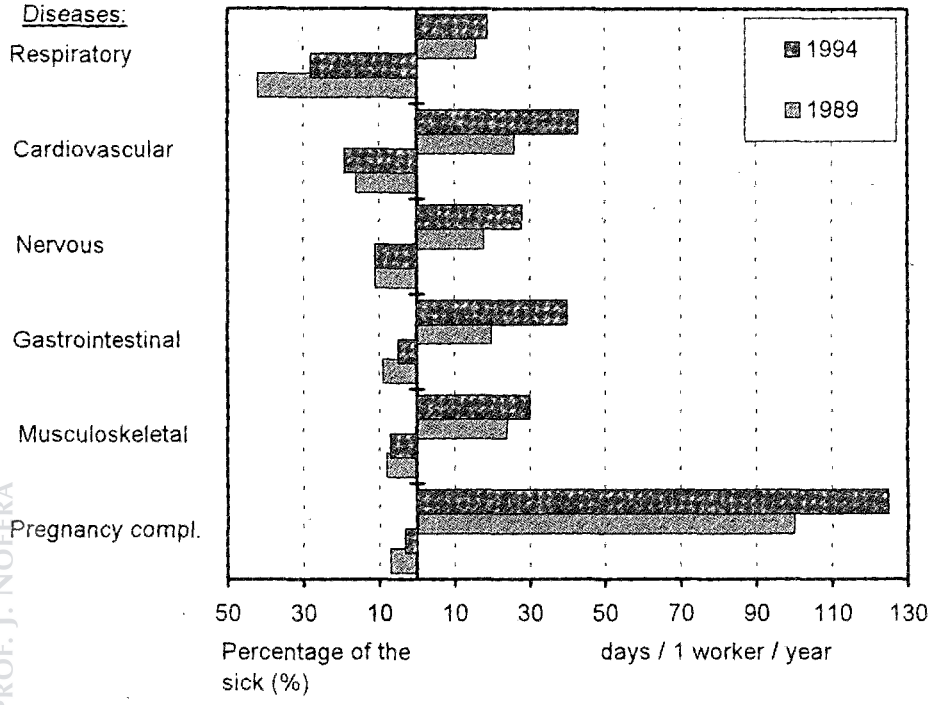

Fig. 2. Parameteres of female sickness absence in 1989 and 1994.

In the plant considered in our study, the level of sickness absence over particular years appeared to be closely related to the percentage of workers discharged from employment. The differences between sickness absence among workers discharged and those employed grew deeper but remained relatively lower among female workers, which results from the generally higher level of sickness absence in this group of workers. The widest gap between the rates of absence of the discharged and remaining workers was recorded in 1994, with the lost time rates being 4 and 3 times higher for the male and female subjects, respectively.

During the study period, when most of the structural transformations took place in the plant, 543 workers (156 females and 357 males) were found to quit employment because of health problems, mainly long-term sickness and disability pension, which made up 8.2% of all discharges in the plant. The rate of sickness absence in this group of workers was several times higher (5 times in females and 4 times in males) than that among workers still employed in the plant. Major causes of female absence included: cardiovascular diseases (27%), musculoskeletal diseases (16%), mental disorders (15%), respiratory diseases (13%), and nervous system diseases (9%).

Considering male absence, the following categories of diseases were found to account for sickness absence among quitting workers: cardiovascular diseases (35%), respiratory diseases (16%), and nervous system diseases (14%). The largest differences between the rates of female and male sickness absence in the groups of workers quitting employment applied to mental disorders (female absence over 2 times higher), arterial hypertension (2.5 times), genitourinary diseases (over 2 times) and musculoskeletal diseases (Table 3).

Table 3. Sickness absence among workers discharged due to health problems and workers with continued employment (standardized ratio)

Medical causes of absence	Working		Discharged	
	Females	Males	Females	Males
Infectious and parasitic diseases	0.09	0.05	0.44	0.71
Neoplasms	0.05	0.01	1.44	0.85
Endocrine, nutritional and metabolic diseases, and immunity disorders	0.05	0.04	0.52	0.42
Diseases of the blood and blood-forming organs	0.06	0.00	0.15	0.03
Mental disorders	0.19	0.08	4.29	1.92
Diseases of the nervous system and sense organs	0.46	0.58	2.50	3.59
Diseases of the circulatory system	0.71	0.60	7.54	8.75
– hypertensive disease	0.43	0.12	2.54	1.04
Diseases of the respiratory system	1.67	1.20	3.79	3.91
– acute respiratory infections	1.24	0.78	1.98	1.31
Diseases of the digestive system	0.38	0.42	1.00	1.74
Diseases of the genitourinary system	0.62	0.10	0.79	0.34
Complications of pregnancy, childbirth, and the puerperium	1.16	–	0.58	–
Diseases of the skin and subcutaneous tissue	0.09	0.11	0.50	0.57
Diseases of the musculoskeletal system and connective tissue	0.34	0.22	4.55	1.97
Other diseases	0.03	0.05	0.26	0.08
All diseases	**5.87**	**3.46**	**28.35**	**24.89**

In 1990–94, 1996 workers (including 700 females) retired (about 305 of all retirements); 811 (12.3%) workers (including 257 females) changed affiliation as agreed by the former and present employers; and 2814 (43%) workers (including 1312 females) terminated work contract due to the plant's financial problems.

The level of sickness absence and its medical causes varied considerably depending on the cause of discharge. The highest rate of absence was recorded in the group of female workers whose work contracts terminated (LTR 9.54 i.e. by 62% higher than that among the workers continuing employment). The main causes of absence in this group were complications of pregnancy, delivery and the puerperium (24%), and respiratory diseases (22%). An increased rate of sickness absence was found among retiring female workers (LTR 5.33), with cardiovascular diseases as the main cause (23%).

In the group of female workers quitting employment for different reasons, the rate of sickness absence was higher than that among male workers. The largest difference could be observed in the group with terminated work contracts – female sickness absence exceeded the male rate by as much as 59%. This excess was mostly

due to a very high rate of absence because of pregnancy complications, genitourinary diseases, mental disorders, and neoplasms.

Among retiring workers, cardiovascular diseases (over 2 times higher rate of absence), neoplasms (LTR 1.27 vs. 0.02), and genitourinary diseases were responsible for the increased female sickness absence, compared to the male rates (Table 4).

Table 4. Sickness absence among discharged male and female workers (standardized ratio)

Medical causes of absence	Females			Males		
	Discharged because of					
	retirement	agreed change of affiliation	termination of work contract for economic reasons	retirement	agreed change of affiliation	termination of work contract for economic reasons
Infectious and parasitic diseases	0.20	0.02	0.06	0.21	0.21	0.17
Neoplasms	1.27	0.01	0.20	0.02	0.01	0.00
Endocrine, nutritional and metabolic diseases, and immunity disorders	0.03	0.00	0.05	0.32	0.03	0.02
Diseases of the blood and blood-forming organs	0.03	0.00	0.14	0.00	0.00	0.00
Mental disorders	0.15	0.23	0.49	0.25	0.24	0.17
Diseases of the nervous system and sense organs	0.38	0.61	0.83	0.80	0.93	1.11
Diseases of the circulatory system	1.91	0.36	1.14	0.85	0.86	0.80
Diseases of the respiratory system	1.53	1.64	2.11	2.53	1.98	2.20
Diseases of the digestive system	0.34	0.15	0.59	0.30	0.49	0.53
Diseases of the genitourinary system	0.57	0.37	0.78	0.04	0.11	0.14
Complications of pregnancy, childbirth, and the puerperium	0.72	1.80	2.34	–	–	–
Diseases of the skin and subcutaneous tissue	0.07	0.02	0.15	0.06	0.13	0.22
Diseases of the musculoskeletal system and connective tissue	1.01	0.39	0.58	0.61	0.38	0.56
Other diseases	0.12	0.22	0.07	0.17	0.08	0.08
All diseases	**8.33**	**5.82**	**9.54**	**6.17**	**5.46**	**5.99**

CONCLUSIONS

The structural transformations in the plant under study brought about the discharge of about 77% of workers during the period between 1989 and 1994, mostly owing to the termination of work contracts for economic reasons, and to earlier retirement. The increase in the rate of sickness absence was higher among female workers: 30% vs 12% for male workers. Among the workers quitting employment, the rate of sickness absence was twice as high as that for the workers in employment. The largest differences were noted in the female population due to cardiovascular diseases (4 times higher rate of absence), neoplasms, and complications of pregnancy, delivery and the puerperium.

The highest level of sickness absence was recorded in the group of workers quitting employment because of health problems. In this population, the male absence was 7 times, and the female 5 times, higher than the rate of absence in workers continuing employment.

A high rate of absence was noted among female workers discharged for economic reasons; it was by 59% higher than among males from the same group. Compared to the findings for female workers staying on in the plant, this rate was higher by 63%. The main medical causes of absence in this group were pregnancy complications (25%), and respiratory diseases (22%).

The economic transformations make a considerable impact on the occurrence of sick absenteeism in workplaces. Workers leaving their jobs because of health problems, as well as those discharged for economic reasons belong to the highest risk group. Our study revealed that during the structural transformations of the plant an interesting phenomenon, namely an escape from current problems into sickness, could be observed among the workers. This tendency, which may be attributed to the stress resulting from insecure socio-economic conditions, was particularly evident among female workers (3,7,10). It was reflected by the highly increased rate of sickness absence due to complications of pregnancy, delivery and the puerperium.

REFERENCES

1. Alexanderson K, Leijon M, Akerlind I, Rydh H, Bjurulf P. Epidemiology of sickness absence in a Swedish county in 1985, 1986 and 1987. Scand J Soc Med 22 (1): 27–34, 1994.
2. Alexanderson K, Hensing G, Carstensen J, Bjurulf P. Pregnancy-related sickness absence among employed women in a Swedish county. Scand J Work Environ Health 21: 191–198, 1995.
3. Geurts A, Buunk BP, Schanfeli WB. Health complaints, social comparisons, and absenteeism. Work Stress 8: 220–234, 1994.
4. Indulski JA, Szubert Z. Female sickness absenteeism in Poland. Inter J Occup Med Environ Health 3, 220–225, 1996.
5. Indulski JA, Szubert Z. System for analyzing sickness absenteeism in Poland. Inter J Occup Med Environ Health 2: 159–165, 1997.
6. International Classification of Diseases. 1977 revision. WHO, Geneva, 1977.
7. Jacobson BH, Aldana SG, Goetzel RZ, Vardell KD, Adams TB, Pietras RJ. The relationship between perceived stress and self-reported illness-related absenteeism. Am J Health Promot 11: 54–61, 1996.
8. Kivimäki M, Vahtera J. Psychosocial factors predicting employee sickness absence during economic decline. J Appl Psych 82: 43–57, 1997.
9. Pålsson B, Horstmann RG, Ohlsson K, Skerfving S: Sick-leave and disability pensions among female assembly workers. Eur J Pub Health 7: 162–168, 1997.

10. Strand K, Wergeland E, Bjerkedal T. Job adjustment as a means to reduce sickness absence during pregnancy. Scand J Work Environ Health 23: 378–384, 1997.
11. Szubert Z. Pregnancy complications as a major cause of sickness absence in Poland. Proceedings of the International Expert Meeting. Espoo, Finland, 10–12 November 1997. Research Reports 20, Finnish Institute of Occupational Health, Helsinki, 1998.
12. Szubert Z, Szeszenia-Dąbrowska N. Temporary work disability in Poland: Analysis of morbidity causes during the years 1985–94. Med Pr 6: 595–602, 1995 (in Polish).
13. Taylor P. Aspects of sickness absence. In: Current Approaches to Occupational Medicine. Ed. A Ward Gardner. John Wright and Son, Bristol, 1979.
14. Vathera J, Kivimäki M, Pentti J. Effect of organisational downsizing on health of employees. Lancet 350: 1124–1128, 1997.

Received for publication: September 16, 1999
Approved for publication: November 15, 1999