Post traumatic paraplegics living in Athens: The impact of pressure sores and UTIs on everyday life activities

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This paper contains the findings of a scientific research which was done on post-traumatic paraplegics who live in the area of Athens, Greece, and measured the impact of pressure sores and UTIs on their everyday life activities. The target population was 127 individuals out of which 98 were observed and interviewed. A semi-structured questionnaire which consisted of two parts used; the first part of the questionnaire included general questions whereas the second contained the Sarno Functional Life Scale (SFLS)¹ which is a tool measuring the level of independence of disabled people. Sixty-two per cent of the population was male. The mean age of the sample population at the time they had the accident which caused the paraplegia was 31.5, while the median was 28.5. The majority of the subjects comes from the lower socio-economic class. Traffic accidents accounted for the 55% of the occurrences of paraplegia, falls for 37%, surgical complication for 4% and athletic activities for the remaining 4%. Forty-nine percent of the sample had been hospitalised in a rehabilitation centre. However, the multiple regressions used did not reveal any statistically significant relation between the hospitalisation in a rehabilitation centre and the paraplegic's scores in any of the Sarno Functional Life Scale's (SFLS) variables. Instead, the multiple regressions employed yielded paraplegics' scores in the SFLS's everyday life activities that were negatively related to age ($P=0.004$) and pressure sores ($P=0.021$). The paraplegics' scores on the SFLS's indoors activities are positively related to the years since injury ($P=0.048$) and health education on daily fluid consumption ($P=0.003$). The scores of the subjects on the SFLS's outdoor activities are positively related to the years of education ($P=0.008$), the years since injury ($P=0.011$), while are negatively related to pressure sores ($P=0.034$) and UTIs (0.044). The subjects' scores on the SFLS variables regarding social relations had a negative relation to sex, (female) ($P=0.0001$), age ($P=0.001$) and pressure sores ($P=0.019$), while they have a positive relation with the years since injury ($P=0.024$).

Keywords: spinal cord injury; post traumatic paraplegia; pressure sores; urinary tract infections; self-care; rehabilitation

Introduction

Spinal cord injuries (SCI), are the most traumatic type of afflictions a person can endure. Severe changes that occur due to the injury affect the injured person and his/her family who are asked to cope with the new situation.

This paper presents the findings of a study which set out to investigate the impact of pressure sores and UTIs on the everyday life activities of post-traumatic paraplegics who live in the area of Athens, capital of Greece. This research was undertaken by the authors because they believed that the study's findings would be helpful in the development of a better under-

standing of the problems that post traumatic paraplegics face and this understanding could enhance the health care professionals ability to provide more adequate care for paraplegics.

Methodology

The target population included post-traumatic paraplegics who lived in Athens, capital of Greece. We encountered a lot of problems in finding addresses and telephone numbers of the targeted population from the hospitals' records, and the first attempt to reach potential subjects met with a very poor response. However, only the records of the Panhellenic Association of Paraplegics proved to be a reliable source for

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accurate addresses and telephone numbers of individuals with SCI, and despite the registration is voluntary, it was decided these records should be used as the source for the population to be studied. One-hundred and twenty-seven individuals who lived in Athens were registered as suffering from post-traumatic paraplegia. Of this group, five people had died. The investigator contacted the remaining 122 potential subjects by telephone to determine their willingness to participate in the study. Subjects were told the purpose of the study and were assured that participation was voluntary and confidential. Twenty-four individuals refused to participate and for the remaining 98 convenient times for the interviews were arranged.

The questionnaire used in the study consisted of two parts. The first part of the questionnaire which was designed by the researchers, contained questions on demographic and socio-economic characteristics, related to the disease and its complications, as well as preventive and therapeutic measures taken.

The second part of the questionnaire contained part of the Sarno Functional Life Scale (SFLS)¹ regarding everyday activities, indoor activities, outdoor activities and social relations. The part of the SFLS regarding cognitive abilities was not used. It was decided to use Sarno Functional Life Scale as a measuring tool for the assessment of the paraplegics because, even though it was old, it was still a reliable instrument for measuring the level of independence of disabled people. The SFLS provides ways to summarise the ratings of function and the degree of the patient's function can be summarised by using the content and manner of performance.^{2,3} Furthermore, one of the researchers had been trained on using the SFLS.

The content validity of the questionnaire was confirmed by two doctors, two nurses and one social worker who checked the questionnaire and were asked to give their comments. Although the substantive areas remained the same, the reviewers made several suggestions. The questionnaire was revised in line with their suggestions. The reliability of the questionnaire was checked by a pilot study. This pilot study gave opportunities to the researchers to decide on the most appropriate method to collect data. All interviews were contacted by an experienced interviewer who had been specially trained for such an undertaking.

The data was analysed by SPSS/PC+ software by the employment of descriptive statistics, logistic regression and multiple regression procedures.⁴ The results are presented in the form of means, and standard deviations, percentages, logistic regression's analysis results, and multiple regression's analysis results.

Results

The sample population consisted of 98 post traumatic paraplegics who lived in Athens. The population surveyed was predominantly male, 62%. Table 1

presents the sample's distribution according to age when paraplegia occurred. The mean age of the sample at that time was 31.35 while the median was 28.5. The minimum age was 11 and the maximum 59 years. Regarding education 12% of the subjects had not completed Primary school, 50% were Primary school graduates, 28% were Secondary school graduates and the remaining 11% were University students or University graduates. The subjects' professions before and after paraplegia are shown on Table 2.

The main cause of paraplegia was traffic accidents which accounted for 55% of the sample, while falls, the second cause, accounted for 37%. Of the subjects who stated that a fall had been the cause for their paraplegia, 21% said that it had occurred at work, specifically building construction and agricultural work. Four people (4%), stated that the cause for their paraplegia was surgical complications, and the remaining four people (4%) had as their cause athletic activities. For the majority of the subjects (71%), paraplegia was complete according to medical records.

About half of the subjects (49%), were hospitalised for a period of time in a rehabilitation centre. The

Table 1 The distribution of the sample according to age when paraplegia occurred

Age group	n	%
10–19	10	10.21
20–29	44	45
30–39	18	18.36
40–49	21	21.43
50–59	5	5.10
Total	98	100.00

Table 2 The subjects occupations before and after paraplegia

Occupation	Before		After	
	n	%	n	%
Agricultural workers	11	11.23	0	0
Building construction workers	9	9.18	0	0
Industrial workers	14	14.28	0	0
Office employees (private sector)	21	21.43	10	10.21
Office employees (public sector)	7	7.14	5	5.10
Students	11	11.23	0	0
Learned professions	4	4.08	5	5.10
Traders	3	3.06	8	8.16
Artists	3	3.06	3	3.06
Seamen	2	2.04	0	0
Craftsmen	0	0	5	5.10
Unemployed	4	4.08	15	15.31
Pensioners	1	1.02	43	43.88
Housewives	0	0	4	4.08
Total	98	100.00	98	100.00

mean duration of the hospitalisation in a rehabilitation centre was 9 months, with a minimum of 2 and a maximum of 36 months.

Pressure sores were a common problem among paraplegics, as 59% of them had suffered from such a complication, for a period of time, after their discharge from the hospital or the rehabilitation centre. The majority of the subjects who had suffered from pressure sores complained that during the long-lasting healing process, they had experienced disturbance and grappled with problems in their personal lives.

Urinary tract infections were another major problem for paraplegics, as 82% of the sample stated that they had at least one urinary infection during their stay at home after their discharge from the hospital or the rehabilitation centre. The mean of the number of urinary tract infections for the whole sample was 5, with a minimum of 0 and a maximum of 30.

As for the health education, only 37% of the sample received some kind of health education on pressure sores prevention, and 25% of the sample had completed a health education programme on self-care in a rehabilitation centre. Only 15% of the sample had been taught about the necessary daily fluid consumption, despite the fact that paraplegics are a high risk population for developing pressure sores and urinary tract infections.

Furthermore, none of the subjects received home care from any public or private organisation. The main source for help at home were informal carers, mainly family members. Seventy-two percent of the sample were cared for at home by family members, while 4% stated they had received care from friends. Eighty-seven percent of the subjects stated that the provision of home care was necessary for paraplegics and should, therefore, be included in the NHS's priorities.

Table 3 shows means, minimum, maximum scores measured, potential scores and the standard deviation on the subjects' performance in the variables of the SFLS.

Table 3 Means, standard deviation, minimum and maximum scores on the subjects performance in the variables of the SFLS

Dependent variable	Mean	SD	n = 98		
			Minimum score	Maximum score	Potential score
Everyday activities	74.94	15.28	11.00	104.00	140
Indoors activities	57.20	24.37	10.00	116.00	160
Outdoors activities	17.41	17.94	0.0	75.00	180
Public relations	24.67	16.79	0.0	61.00	120

Table 4 gives a logistic regression for the relationship between hospitalisation in a rehabilitation centre and years of education, duration of the disease and age at spinal cord injury.

The multiple regression results for the subjects' scores to the section of the SFLS on everyday activities in relation with various dependent variables are given in Table 5, while Table 6 gives the results from a multiple regression for the subjects' scores in the SFLS section on indoor activities in relation with various dependent variables. The multiple regression results for the subjects scores on the SFLS section on outdoor activities in relation with various dependent variables are shown in Table 7, while Table 8 shows the multiple regression results for the subjects' scores in the SFLS section on social relations activities in relation with various dependent variables.

Table 4 Logistic regression for the relation between hospitalisation in a rehabilitation centre and years of education, the years since injury and age when paraplegia occurred

Independent variables	χ^2	n = 98 P	SE(β)
Years of education	3.84	0.050	0.055
Years since injury	0.74	0.39	NS
Age when paraplegia occurred	0.80	0.37	NS

Table 5 Multiple regression between the dependent variable everyday activities (SFLS) and various independent variables

Independent variables		n = 98	
		β SE(β)	P
Sex	(Female)	2.324 (2.971)	NS
Age		-0.427 (0.143)	0.004
Years of education		0.319 (0.421)	NS
Years since injury		0.342 (0.185)	NS
Hospitalisation in a rehabilitation centre	Yes	5.567 (3.422)	NS
Pressure sores	Yes	-8.073 (3.425)	0.021
UTIs	Yes	2.986 (4.353)	NS
Health education on pressure sores prevention	Yes	-1.205 (3.185)	NS
Health education on daily fluid consumption	Yes	5.548 (3.642)	NS
Health education on self-care	Yes	1.013 (4.271)	NS

Table 6 Multiple regression between the dependent variable indoor activities (SFLS) and various independent variables

		n = 98	
<i>Independent variables</i>		β <i>SE</i> (β)	P
Sex	(Female)	7.223 (4.275)	NS
Age		-0.277 (0.206)	NS
Years of education		1.549 (0.606)	NS
Years since injury		0.534 (0.267)	0.048
Hospitalisation in a rehabilitation centre	Yes	4.820 (4.924)	NS
Pressure sores	Yes	-6.424 (4.924)	NS
UTIs	Yes	-7.601 (5.264)	NS
Health education on pressure sores prevention	Yes	10.087 (4.583)	NS
Health education on daily fluid consumption	Yes	16.052 (5.241)	0.003
Health education on self-care	Yes	-3.495 (6.146)	NS

Table 7 Multiple regression between the dependent variable outdoor activities (SFLS) and various independent variables

		n = 98	
<i>Independent variables</i>		β <i>SE</i> (β)	P
Sex	(Female)	-2.775 (3.236)	NS
Age		-0.253 (0.156)	NS
Years of education		1.246 (0.459)	0.008
Years since injury		0.528 (0.202)	0.011
Hospitalisation in a rehabilitation centre	Yes	4.446 (3.727)	NS
Pressure sores	Yes	-8.025 (3.731)	0.034
UTIs	Yes	-9.692 (4.742)	0.044
Health education on pressure sores prevention	Yes	4.753 (3.469)	NS
Health education on daily fluid consumption	Yes	5.786 (3.967)	NS
Health education on self-care	Yes	0.374 (4.652)	NS

Discussion

As can be seen from the analysis of the present study's data, post-traumatic paraplegia is more frequent among young males and the most frequent cause of spinal cord injuries is motor vehicle accidents. These findings occur with many other researchers' findings.⁵⁻¹¹ The majority of the subjects come from the low socio-economic class, because the majority of them had not completed primary school or were primary school graduates and according to Trichopoulos,¹² the years of education are still the only safe indicator of socio-economic class in Greece. The subjects' occupations changed after the paraplegia (Table 3), and an increase was noted in the number of paraplegic individuals who became unemployed or retired on pension. Roughly similar are the findings of other researchers in other countries.^{5,6,9-11}

The findings of the present study revealed that only 49% of the sample was hospitalised in a rehabilitation centre. This is because there is only one rehabilitation centre in Greece and it is only in the last decade that other rehabilitation clinics have been established in general hospitals. A logistic regression, Table 4, revealed that there is a positive relation between the years of education of a paraplegic, which is the only safe indicator of socio-economic class in Greece, and his/her chances of hospitalisation in a rehabilitation centre. Hence, individuals belonging to higher socio-economic classes have more chances to be hospitalised in a rehabilitation centre. However, it is worth

Table 8 Multiple regression between the dependent variable social relations (SFLS) and various independent variables

		n = 98	
<i>Independent variables</i>		β <i>SE</i> (β)	P
Sex	(Female)	-11.499 (2.862)	0.0001
Age		-0.364 (0.138)	0.001
Years of education		1.635 (0.400)	0.0001
Years since injury		0.409 (0.179)	0.024
Hospitalisation in a rehabilitation centre	Yes	-0.649 (3.296)	NS
Pressure sores	Yes	-7.922 (3.300)	0.019
UTIs	Yes	-1.984 (4.193)	NS
Health education on pressure sores prevention	Yes	4.753 (3.469)	NS
Health education on daily fluid consumption	Yes	4.256 (3.509)	NS
Health education on self-care	Yes	-2.844 (4.114)	NS

pointing out that, as it is shown in Tables 5, 6, 7 and 8 the statistical procedures of multiple regression used did not show any statistically significant relation between hospitalisation in a rehabilitation centre and the scores of paraplegics in any of the SFLS variables. However, SFLS is a special tool for the measurement of the level of independence of disabled people and therefore a crucial question is raised here. 'Does hospitalisation in a rehabilitation centre promote the independence of disabled people?'. Nevertheless, the present study was not designed to examine this issue and for this reason the researchers think that special research is needed in order to draw safe conclusions on the whole issue.

As can be seen from the multiple regressions used (Tables 5, 6, 7 and 8), the paraplegics' scores in the various variables of the SFLS in relation to independent variables, age and pressure sores are negatively related to everyday life activities (Table 5), while the years since injury and health education on daily fluid consumption are positively related indoor activities (Table 6). Furthermore, the years of education and the years since injury have a positive relation to outdoor activities (Table 7), while pressure sores and urinary tract infections, are negatively related with outdoor activities (Table 7). Social relations (Table 8) are negatively related with sex (female), age and pressure sores, while they are positively related with the years of education and the years since injury.

From these results it becomes clear that paraplegics with UTIs are much more likely to be less involved in outdoor activities than paraplegics without UTIs. Possibly these individuals reduce their involvement in outdoor activities, because they spend a lot of time in bed or are frequently hospitalised. Besides, individuals suffering from pressure sores are less likely to be involved in outdoor activities and social relations because, as it is mentioned in the results, they experienced disturbance and faced problems in their personal lives, situations which usually make people retreat and stay home. Regarding the positive relation of the years of education and outdoors activities, it is worth mentioning that public transportation in Greece is not suitable for people in wheelchairs. Even more so, the prices of private cars are high in Greece and hiring a taxi requires a considerable amount of money. Therefore, only paraplegics of the higher socio-economic class, (more years of education), can afford these expenses.

Regarding the negative relation between sex (female) and social relations, in actuality, female paraplegics, as most of the female population in Greece, are less involved in activities of unions, political parties and other social gatherings, and thus they score lower than men in the social activities of the SFLS.

There is also a positive relation between social relations and the years of education of the subjects. However, it could be speculated that the more

educated people are, the more involved they usually become in social activities, in activities of organisations such as union, church, political and therefore they enjoy a more sociable life. Furthermore, people with higher education usually work in offices rather than doing labour work, which practically means that they are able to continue doing the same work as before their injury.

It is important to stress that the years since injury are positively related with the subjects' scores on most of the SFLS's variables. This finding can be explained by the acceptance of the assumption that with the passing of the years since their injury paraplegics are adapted to the new situation and they try to live with their disability as best as they can.

Regarding the negative relation of age to the everyday activities and social relation it could be speculated that these findings are normal, since most of the elderly people gradually lose their abilities for self-care and are less involved in social activities.

It is important to be mentioned here that the multiple regressions applied for health education on pressure sores prevention, health education on daily fluid consumption, health education on self-care and the scores of paraplegics on the SFLS activities did not reveal any relation between them except from health education on daily fluid consumption and indoor activities. However, it is difficult to draw any special comment on these findings because after a careful examination of the data it was found that there was not available any special information (duration, content, year since attendance etc), for the health education programmes declared to be completed by the subjects. For these reasons the researchers prefer not to draw any comment on these findings.

However, from the founded relations between pressure sores, UTIs and the subjects performances in the SFLS's activities it could be considered that interventions preventing pressure sores and UTIs could help paraplegics to improve their self-care, their outdoors activities and their social relations. Such interventions are the provision of sufficient health education on pressure sores prevention and urinary tract infections prevention. Thus health education should be provided in hospitals and rehabilitation centres and also at home by health visitors and community nurses.

As is clear from the results, the main source of the subjects for home health care are informal carers, mainly family members, and attention should be focused on the complete absence of the NHS services or any other public organisation in the provision of home health care. At any rate, the necessity for provision of home health care services is strongly urged by the majority of the subjects, 87% of which believe that the organisation of home health care services for SCI individuals should be a priority for the Greek NHS. In the literature review there is a great deal of evidence supporting this attitude and stressing that such services usually helps the SCI

population to suffer from fewer complications of the various systems and to enjoy a better quality of life.^{13–21}

In addition, it is necessary for some measures to be taken in order to help nurses and other health professionals to fully understand their educational role in the rehabilitation of paraplegic individuals. Such measures are:

- (1) The establishment of the Rehabilitation Nursing speciality; and
- (2) Provision through the continuing education programmes of opportunities for nurses and other health professionals to learn more about health education.

Implications for further research

The present study was not designed to examine the relation between hospitalisation in a rehabilitation centre and the independence of paraplegics. However, the results of the present study did not reveal any relation between the paraplegics scores in SFLS activities and the hospitalisation in a rehabilitation centre. For this reason the researchers think that a special research is needed.

Furthermore, the present research failed to draw safe conclusions regarding the relation between health education and the level of independence of paraplegics. Therefore researchers think that a research examining this issue will add very much to the Greek rehabilitation literature.

Our intention is to proceed to examine the relation of environmental factors and the level of independence of paraplegics.

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