

Clinical pain research

The Functional Barometer – An analysis of a self-assessment questionnaire with ICF-coding regarding functional/activity limitations and quality of life due to pain – Differences in age gender and origin of pain

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ABSTRACT

Long standing non-malignant pain leads to a variety of limitations which can be assessed by means of the self-assessment questionnaire Functional Barometer. It is designed to assess the extent and limitations in function, activity and decreased quality-of-life and is adapted to the International Classification of Functioning and Health.

Aim: To investigate the outcome and differences in age, gender and origin of pain in patients with long-standing non-malignant pain regarding the subjective experience of functional-, activity- and quality-of-life limitations.

Method: 300 patients with a median duration of pain of 49 months referred to a Pain Management Centre filled out the Functional Barometer questionnaire, adapted to the International Classification of Functioning and Health.

Results: 66% patients were women and 34% were men. Seventy-five percent were in working age, 18–64 years. The duration before being referred to a pain specialist was over 4 years and 65% reported pain from more than three origins. Significant differences in functioning, activity and quality-of-life were found in comparing gender, age and origin of pain. Men more often reported physiological limitations while women more often reported psychological limitations of functioning, activity and quality-of-life. The most important were that men more often had difficulties in walking and climbing stairs, while women reported problems with concentration, stress and psychological demands, family relations and contact with friends.

Conclusion: The significant differences regarding functioning, activity and quality-of-life between women and men as age and origin of pain must be taken into account when tailoring individual treatment and rehabilitation programmes.

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1. Introduction

Long-standing non-malignant pain (LSNMP), leads to varying degrees to function and activity limitations as well as impact on quality-of-life (QoL) and will affect an individual's life, spare time, economy, psychosocial well-being and capacity for work [1]. LSNMP is also a major reason for prolonged sick leave and early retirement, thereby causing high costs for the national insurance system, health care, employers and society [2–6]. A large number

of pain patients are referred to Pain Management Centres, as other specialists do not come to terms with their patients' pain.

There is a lack of studies in which ICF-coding is included and particularly there is a lack of pain-based studies using the International Classification of Functioning and Health (ICF). The Functional Barometer (FB) is a validated and quality assured self-assessment instrument for patients suffering from pain and is so far the only questionnaire in Swedish using ICF-variables based on pain [7]. Being able to document which limitations LSNMP causes, but also what the patient is capable to perform despite and because of their pain, facilitates how to target treatment and rehabilitation individually. This was also a measure to avoid and prevent ineffective, unnecessary, costly and time-consuming investigations and treatments, and to prevent or interrupt the risk of medicalization. This

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in turn reduces patient suffering and costs. The saved costs for this over treatment are expected to have a positive effect on society in general as previous research indicates [2–6].

The aim of this study was to investigate the outcome and differences in age, gender and origin of pain in patients with LSNMP regarding the subjective experience of functional-, activity- and QoL limitations.

Method and patient selection: All patients that were referred to the Pain Management Clinic at a University Hospital in Stockholm, filled out the Functional Barometer questionnaire (FB). The FB consists of 28 questions, 12 specified variables cover body function and activities/participation and one additional optional item variable for the patient to assess. Additionally there are 12 QoL variables, and four items of pain (Tables 2–4) [7–9]. The FB is based on the patient's experience of pain but is also adapted to the WHO international classification, ICF (International Classification of Functioning and Health) of patients' disability, activity limitations and participation [10–15]. All items are assessed by a verbal descriptive problem scale, the same as the ICF qualifier, the five categories graded 0–4. The categories defined as *no* (0), *slight* (1), *moderate* (2), *major* (3), and *total* (4) problems [7].

300 patient questionnaires were randomly selected for the study. Two hundred and eighty two of these questionnaires could be used to collect data for this study (9% drop out).

By completing the FB questionnaire the patients assessed to what extent pain affected their function, activity and QoL. This gave an ICF code and category grade for each question and provided a clear overview of the patient's situation and problems due to their pain.

A pain drawing is connected to the FB. It was used to register what kind of pain the patients might be suffering from. The patients pain was also divided into three categories; one origin, 2 or 3 origins or more than 3 origins.

2. Ethics review

An application to the Ethical Review Board in Stockholm was performed. The Ethics Committee concluded that an ethic review was not required for this study as it concerns a qualitative study and not contain sensitive personal data.

2.1. Statistics

All statistical analyses were performed using IBM SPSS Statistics version 23.

To compare the differences between women and men the non-parametric tests such as Mann–Whitney tests, Chi-square tests and Cross tabulation were used. The describing statistics were performed using n, percent (%), mean and standard deviation (SD). For the group statistics regarding age, the T-Test were used. A value of $p < 0.05$ was considered statistically significant.

3. Results

Three hundred, 207 women and 93 men aged between 18 and 88 years, who had filled out the FB questionnaire were randomly selected for the study. As shown in Table 1, 66% patients were women and 34% were men. Seventy-five percent were in working age, 18–64 years. The mean age for women were 49 and for men 52 ranged from 18 to 88 years for both groups.

The duration of pain before referral to the pain management unit and occurrence of pain in different regions of the body appear in Table 1. 220 of the patients had answered this question, 145 women and 75 men, a dropout rate of 27%. The median duration of pain before referred to the pain management unit was 49 months. For

Table 1

Demographic data of the 300 patients.

	No of patients	Age					Percentiles		
		Mean	Median	SD	Minimum	Maximum	25	50	75
Total	300	50	50	18	18	88	35	50	64
Women	207	49	48	18.5	18	88	33	48	64
Men	93	52	53	16.6	18	87	40	53	64

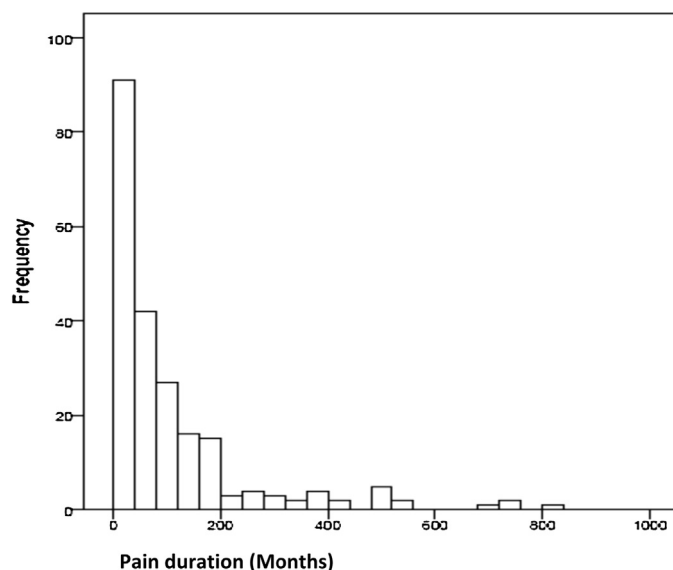


Fig. 1. The duration of pain of 220 patients before referred to the pain management unit was 108 months, for women 118 months (range 4–732 months) and for men 89 months (range 6–804 months).

women between 18 and 64 years of age the median was 48 months (range 5–528 months) and for men in the same age 51 months (range 6–372 months). For women over 65 years the median was 40 months (range 4–732 months) and for men over 65 years of age 60 months (range 20–804 months) (Fig. 1 and Tables 2a and 2b). 282 patients had filled out the question about pain regions, a dropout rate of 9%. Thirteen percent of the patients reported pain from one region, 22% reported pain from 2 to 3 regions and 65% reported pain from more than 3 regions of their body. For women the corresponding percent were 11, 21 and 67% and for men 18, 23 and 60% (Table 3).

In Table 4 the differences between women and men aged 18–64 versus women and men over 65 years of age are seen. Regarding function and activities on a total the ICF variables “walking” (d 450) and “walking in stairs” (d 4551) seems to be the most difficult activities for pain patients in the study group, $p = 0.008$ and $p = 0.004$. This is also the fact for men over 65, $p = 0.003$ and $p < 0.001$, but for men under 65 years of age and for women there was no significant difference found.

In this study the activities and ICF variables “dressing” (d 540) and “making the bed” (d 649) did not seem to be affected due to pain $p = 0.957$ and $p = 0.854$.

Men seems to have less problems with “joint mobility” (b 710), “muscle strength” (b 730), “muscle endurance” (b 740), and “ordinary housework” (d 640) than women but there was no significant difference found.

Pain was a significant factor to reduce QoL regarding “concentration” (b 160) $p = 0.002$, “stress and psychological demands” (d 240) $p = 0.001$, “family relation” (d 760) $p = 0.003$ and “economical self-support” (d 870) $p < 0.001$ for patients over 65 years. Women over

Table 2a
Duration of pain in months of 220 patients.

	No of patients	Mean	Median	SD	Minimum	Maximum	Percentiles		
							25	50	75
Total	300								
Missing	80								
Missing Women	62								
Missing Men	18								
Valid	220	108	49	141	4	804	26	49	120
Women	145	118	48	153	4	732	25	48	150
Men	75	89	55	113	6	804	29	55	96
18–64 years	166	109	49		5	528	26	49	120
>65 years	54	114	47		4	804	26	47	183

Table 2b
Duration of pain in months for the 220 patients before being referred to the pain specialist centre. Presented in total and divided in subgroups of age and gender.

	No of patients (%)	Mean	Median	SD	Minimum	Maximum	Percentiles		
							25	50	75
Total	220 (100%)	108	49	141	4	804	26	49	120
18–64 y	166 (75%)	95	49	106	5	528	26	49	120
>65 y	54 (25%)	150	47	212	4	804	26	47	183
Women 18–64 y	110 (50%)	102	48	116	5	528	25	48	144
>65 y	35 (16%)	170	40	229	4	732	24	40	265
Men 18–64 y	56 (25%)	82	51	84	6	372	27	51	96
>65 y	19 (9%)	112	60	175	20	804	33	60	108

Table 3
Reported number of pain regions from 282 patients.

No of valid patients	282			
Missing	18			
		Percent Total	Percent Women	Percent Men
Pain from 1 region	38	13	11	18
Pain from 2 to 3 regions	61	22	21	23
Pain from more than 3 regions	183	65	67	60

65 reported a statistically significant problem with “concentration” $p=0.003$, “stress and psychological demands” (d 240) $p=0.009$, “family relation” (d 760) $p=0.004$ and “contact with friends” (d 750) $p=0.033$ in comparison to men and younger women.

In the ICF variable “economical self-support” there was a clear difference $p<0.001$ in the groups men and women over 65 years, in comparison to younger patients. Comparing men aged 18–64 and men over 65, “stress and psychological demands” $p=0.030$ and “economical self-support” $p=0.001$ were the ICF variables that elderly men found most affected due to their pain.

ICF variables like “energy” (b 130), “leisure time” (d 920) and “contact with friends” (d 750) does not seem to affect men in this study to the same extent as women but there is no significant defers found.

The question how pain affected the patients overall, the elderly over 65 assessed that when their pain was “at its worse” (b 280) $p<0.001$ it had a negative impact on functioning, activity and QoL. This was also the fact for women over 65, but not statistically significant for men ($p=0.221$).

Regarding the number of origins of pain, the pain drawing was used and the patients divided into three categories; one origin, 2 or 3 origins or more than 3 origins. Almost all ICF variables showed statistically significance for difficulties in functioning, activity and QoL if the patients had more than three origins of pain. The only variables who were not significant was “driving car”, “pain just now” and “worst pain” (Figs. 2–4).

4. Discussion

The aim of this study was to investigate and evaluate the outcome and differences in age, gender and origin of pain in patients suffering from LSNMP regarding the subjective experience of functional-, activity- and QoL limitations. In this study the majority of the patients were women and in working age. This seems to be in co-ordinance with most studies of persistent pain. One explanation for the skew numbers of patients in working age compared with patients over the age of 65 could be that elderly patients will not be referred to pain specialists rather than being treated in primary care. The mean age for women were 49 and for men 52. This might indicate that it is the older patients in working age that are preferably referred to pain specialists.

The statistical analysis of time for the study population before they were referred to a pain specialist showed no normal distribution. Therefore it is not sufficient to present the months in mean but in median and percentiles (Fig. 1 and Table 2b). If patients with severe pain conditions have to wait for more than four years before they are referred to a pain specialist centre, something is lacking in the health organization in the Stockholm area. There is a lack of pain specialists and one may anticipate it must be even worse in other parts of Sweden [6]. The same problem was also reported in a European survey by Breivik et al. [2] and in Pain Proposal, a European Consensus Report (2010) [3].

The majority of the patients in this study suffered from pain from more than three regions of their body (65%). This was independent of gender. As most of the patients had different kinds of pain from different regions of their body, it was not possible to make subgroups out of their pain classification. This would of cause have been of interest as one may anticipate differences in limitations of functioning, activity and QoL, depending on differences in type of pain. The patients often suffered from a combination of different pain, pain qualities and origins. However, the FB could be useful in helping to find symptoms pointing in a diagnosis of a more neuropathic or nociceptive pain direction.

This study points in the direction that men seems to have less problems with “joint mobility”, “muscle strength”, “muscle endurance” and “ordinary housework” than women. Even if there was no significant difference found it might indicate a difference

Table 4

Differences in women and men aged 18–64 vs women and men aged over 65 years. The results are presented with the rate of given answers of the total.

Do you have problem because of your pain with. . . .								
FB no.	ICF-code	Function/Activity	Total		Women		Men	
			n	p-value	n	p-value	n	p-value
1	d 540	Dressing. 18–64	221	0.957	150	0.935	71	0.802
		➤=65	71		51		20	
2	b 710	Joint mobility. 18–64	207	0.317	140	0.296	67	0.830
		➤=65	73		51		22	
3	b 730	Muscle strength. 18–64	218	0.245	149	0.285	69	0.595
		➤=65	70		50		20	
4	b 740	Endurance. 18–64	214	0.226	145	0.207	69	0.662
		➤=65	67		48		19	
5	d 450	Walking. 18–64	211	0.008	141	0.208	70	0.003
		➤=65	69		48		21	
6	d 4551	Walking in stairs. 18–64	214	0.004	146	0.268	68	<0.001
		➤=65	69		47		22	
7	d 4153	Keeping posture. 18–64	212	0.651	147	0.509	65	0.865
		➤=65	68		48		20	
8	d 649	Making the bed. 18–64	219	0.854	150	0.685	69	0.772
		➤=65	70		48		22	
9	d 640	Ordinary housework. 18–64	214	0.226	144	0.088	70	0.889
		➤=65	70		49		21	
10	d 430	Lifting/carrying things. 18–64	212	0.526	146	0.730	66	0.571
		➤=65	72		50		22	
11	d 4751	Driving a car. 18–64	117	0.061	72	0.225	45	0.149
		➤=65	44		25		19	
12	d 470	Using transportation. 18–64	215	0.179	147	0.288	68	0.512
		➤=65	68		49		19	
Do you have problem because of your pain with. . . .								
FB no.	ICF code	Quality-of-life	Total		Women		Men	
			n	p-value	n	p-value	n	p-value
14	b 134	Sleeping. 18–64	215	0.133	145	0.405	70	0.145
		➤=65	69		47		22	
15	b 130	Energy. 18–64	218	0.140	150	0.103	68	0.823
		➤=65	72		50		22	
16	b 160	Concentration. 18–64	220	0.002	150	0.003	70	0.165
		➤=65	71		49		22	
17	d 240	Stress. Psychological demands. 18–64	213	0.001	144	0.009	69	0.030
		➤=65	70		48		22	
18	b 152	Emotional functions. 18–64	202	0.244	143	0.355	59	0.485
		➤=65	70		48		22	
19	b 535	Gastro-intestinal functions. 18–64	216	0.435	145	0.449	71	0.833
		➤=65	48		48		22	
20	d 920	Leisure time. 18–64	148	0.097	148	0.089	68	0.578
		➤=65	70		49		21	
21	d 760	Family relation. 18–64	212	0.003	145	0.004	67	0.302
		➤=65	71		49		22	
22	d 750	Contact with friends. 18–64	218	0.054	149	0.033	69	0.718
		➤=65	72		50		22	
23	d 750	Self-support. 18–64	212	<0.001	145	<0.001	67	0.001
		➤=65	66		44		22	
24	d 850	Managing pay-work. 18–64	157	0.051	103	0.098	57	0.294
		➤=65	16		9		7	
Do you have problem because of your pain with. . . .								
FB no.	ICF code	Perceived pain	Total		Women		Men	
			n	p-value	n	p-value	n	p-value
25	b 280	Pain just now. 18–64	209	0.985	141	0.870	68	0.729
		➤=65	69		48		21	
26	b 280	Pain the last week. 18–64	212	0.375	145	0.276	67	0.996
		➤=65	69		49		20	
27	b 280	The mildest pain. 18–64	211	0.957	149	0.977	62	0.910
		➤=65	71		49		22	
28	b 280	The worst pain. 18–64	215	<0.001	150	<0.001	65	0.221
		➤=65	70		48		22	

The p-values in bold are the significant.

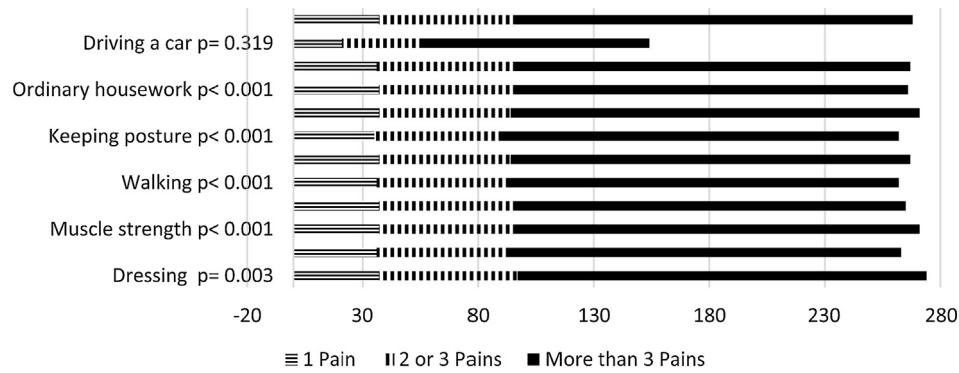


Fig. 2. Origins of pain function/activity.

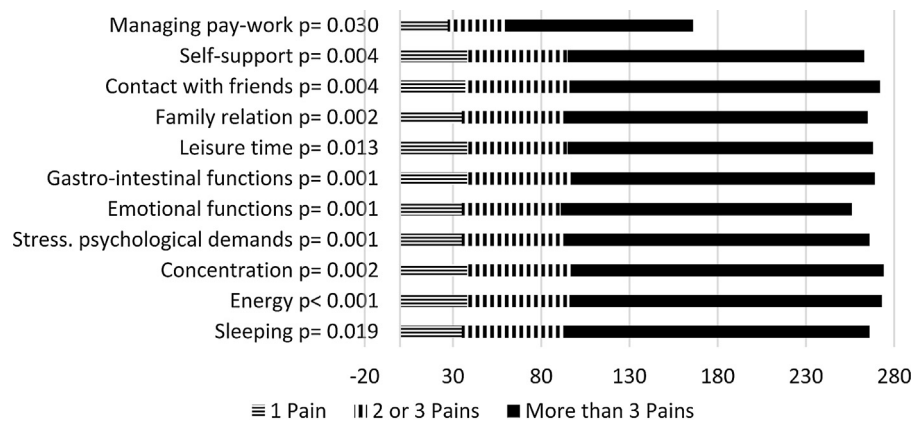


Fig. 3. Origins of pain quality of life.

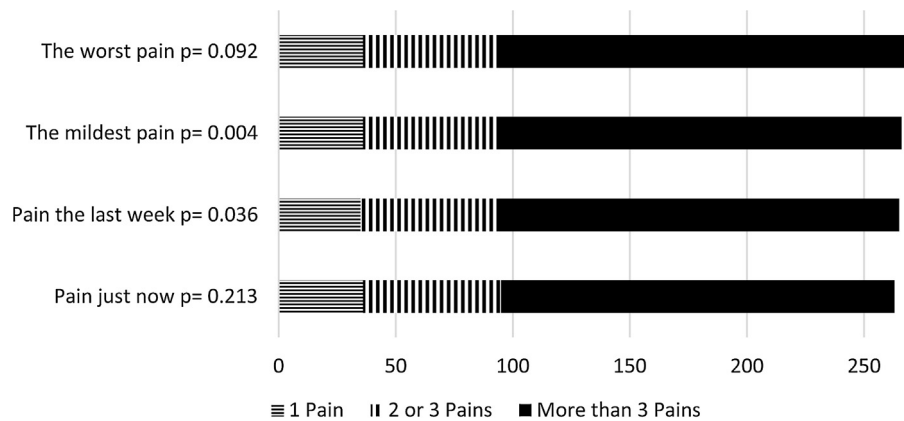


Fig. 4. Perceived pain and origins of pain.

in gender and gender roles. However, there was a clear significant difference between younger and older patients and especially for women over 65 years regarding problems with the ICF items “concentration”, “stress and psychological demands”, “family relation” and “contact with friends” in comparison to men and younger women. Men over 65, in opposite to men aged from 18 to 64 years reported more problems with “stress and psychological demands” due to their pain. One may speculate that the increased QoL for men with pain could be attributed to response shift [16]. Men with pain might have a response shift for physiological factors, i.e. QoL for physiological factors are increased during ageing and QoL increases with age in the normal population. Increased QoL, with age has also been described for pain in patients suffering from post-polio syndrome [17–19].

Almost all ICF variables showed statistically significance for difficulties in functioning, activity and QoL if the patients had more than three origins of pain. The question how pain affected the patients overall, elderly assessed that when their pain was “at its worse” it had a significant negative impact on functioning, activity and QoL. This was also the fact for women over 65, but not statistically significant for men.

This study has methodological limitations with no comparison group from another pain management centre. Furthermore, there is no follow-up data presented. However, this was not the aim of this study. Furthermore, the population in the actual area has an over-representation of socio-economic problems, immigrants and people with a low level of education [4,5,20–23], which may have had an influence of the results. Another common limitation in

studies like this, with a self-assessment questionnaire like the FB there is more of a rule than exception that patients for some reason have not filled in all answers. This makes the whole interpretation of the answers more unsecure. For example of the 300 participants in this study only 220 filled in the duration of their pain a dropout of 27% and 282 patients registered their regions of pain a dropout of 9%. It can always be discussed if the patients then should be asked to fill in the missing data or not and to that extent they could be enrolled in the study. This might influence the answers in one way or another. In this study the given answers for every item was studied as it was given by the patient.

5. Conclusion

Pain affects the patients overall, especially elderly and it has a negative impact on functioning, activity and QoL. This study shows that men have more difficulties with “walking” and “climbing stairs” while women especially over 65 years of age reported statistically significant problems with “concentration”, “stress and psychological demands”, “family relation” and “contact with friends” in comparison to men and younger women. The FB with the included ICF variables can be useful in the assessment of the pain patient's limits and possibilities. The differences must be taken into account when tailoring individual treatment and rehabilitation programmes.

Conflicts of interest

The authors state they have no conflict of interest.

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