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Chapter 3.

Hip Fracture in Elderly Patients: Outcomes for Function, Quality of Life and Type of Residence

Abstract:

A prospective study was done to investigate functional outcome, quality of life and type of residence after hip fracture in patients 65 years and older. One hundred and two patients admitted consecutively to a university and a general hospital were followed up to 4 months after admission. The mean age of the participants was 83 years; 58% came from their own home and 42% came from institutions. Nearly 70% had two or more diagnoses other than the hip fracture. Cumulative mortality was 20% at 4 months after fracture. Of surviving patients, 57% were back in their original situation for accommodation, 43% reached the same level of walking ability, and 17% achieved the same level of activities of daily living as before fracture. Patients experienced on average three complications, 26% of which were severe. Quality of life improved up to 4 months; however, the quality of life at 4 months was worse than quality of life reported in a reference population. Average costs amounted to € (Euro) 15.338 (which at the time was nearly equivalent to the US dollar) per patient with nearly 50% of the costs attributable to hospital costs and 30% attributable to nursing home costs. The results of this study show a poor outcome after hip fracture in elderly patients.

3.1 Introduction

Although literature about mortality, morbidity, and prognostic factors for rehabilitation after hip fracture is abundant, few studies report health related quality of life [6,8,30] or give a detailed account of the type of residence in which the patient is living and the accompanying costs of treatment and living arrangements.[7,15,33] To provide a full description of the consequences of hip fracture for elderly patients for these aspects, it is important to include patients living in the community and patients living in institutions. The outcomes of patients with hip fracture were investigated with emphasis on quality of life and type of residence in a consecutive

series of patients who were hospitalized, including patients previously living in institutions.

3.2 Materials and Methods

Between October 1996 and December 1997 102 consecutive patients, aged 65 years and older, who were admitted with a fresh hip fracture to a university and a general hospital in Rotterdam, the Netherlands, were recruited for this study. Patients with a hip fracture because of metastatic cancer or multitrauma were excluded. Twenty-eight patients (22%) refused to participate. There were no differences in age and gender between participants and nonparticipants. More nonparticipants lived at home before admission (80% versus 60%).

Patients underwent surgery within 1-2 days after hospital admission and were mobilized as soon as possible (1-2 days after surgery). All patients received thromboembolic prophylaxis unless contraindications were present.

The same investigator interviewed and evaluated all patients at 1 week, 1 month, and 4 months after admission to hospital. Walking ability was evaluated on a five-point scale (ranging from not able to walk to walk without walking aids) and activities of daily living/ instrumental activities of daily living by the Rehabilitation Activities Profile (Appendix).[2] Walking ability and Rehabilitation Activities Profile also were estimated for the time before the fracture occurred. Health-related quality of life was measured by the Nottingham Health Profile [18] and the Dartmouth COOP Functional Health Assessment Charts revised by the World Organization of National Colleges, Academies and Academic Associations of General Practitioners and Family Physicians (Appendix).[29] In cases of severe cognitive impairment or physical disablement, a proxy was interviewed. Reference values from the literature, after matching for age and gender, were used for comparison.[17,26] Cognitive status was measured with the Mini Mental State Examination.[14]

Information regarding comorbidity, type of fracture and surgery, complications, and length of stay was obtained from medical charts and health professionals. Comorbidity and complications were classified using a severity rating scale (Appendix).[3] To determine predictive factors at 4 months for being at home, death, and functioning, bivariate and multivariate analyses were performed using the following variables: age, functioning before fracture, cognitive status at 1 week, number of comorbidities, dementia, type of residence lived in before fracture, and type of fracture and surgery.

Table 1.
Characteristics of Patients with a Hip Fracture Admitted to Hospital (n = 102)

Variable		Value
Mean age (years)		83
	median (25th -75th percentile)	83 (77-88)
Percentage female		84%
Admitted from (%)		
	own home	58%
	home for the elderly	26%
	nursing home	14%
	hospital/other	2%
Fracture type (%)		
	cervical	43%
	trochanteric	49%
	subtrochanteric	8%
Operation type(%)		
	hemiarthroplasty	25%
	dynamic hip screw	19%
	Hansson pins	13%
	gamma nail	37%
	other/not operated	7%
Comorbidity		
% of patients (with functional limitation)		
	musculoskeletal disorder	42% (29%)
	cardiovascular disorder	45% (12%)
	neuropsychiatric disorder	38% (35%)
	neurologic disorder	26% (11%)
	respiratory disorder	16% (6%)
	metabolic and endocrine disorder	16% (0%)
	urogenital disorder	8% (1%)
	gastrointestinal disorder	9% (0%)
Number of comorbidities (% of patients)		
	0	6%
	1	27%
	2	20%
	3	30%
	>3	17%
	mean per patient	2.4

To calculate real individual costs of professionals (doctors, nurses, and physiotherapists), their activities were registered in minutes per day. Laboratory and radiology examinations and other interventions were elicited from the hospital administration. Total costs in hospital, nursing home, or home for the elderly were calculated by adding hotel costs. Costs to 3 months before admission were calculated according to information from the patient or proxy. Costs were expressed in Euros (broadly equivalent to a US Dollar).

Student's t test, Wilcoxon matched pairs signed rank test, Mann-Whitney U test, chi square test, logistic regression analysis, and linear regression analysis were used in the statistical analysis. Significance testing was two-tailed with $p < 0.05$ accepted as statistically significant. Statistical evaluations were done using SPSS 6.1 (SPSS, Chicago, IL).

3.3 Results

Nonparticipants

Twenty-eight patients refused to participate. The patients' mean age was 82 years and 82% were women. Twenty-three patients who refused to participate came from home, and five came from a home for the elderly. There were no significant differences in age and gender between patients who participated and those who did not participate, but more patients who did not participate came from home ($p = 0.03$). Residence at 4 months was not different from the 4- month residence of participants: six patients died, 13 patients were at home, four patients were in a home for the elderly, four patients were in a nursing home and one patient still in the hospital.

Hospitals

Except for type of surgery (more dynamic hip screws and less gamma nails in the university hospital, chi square test, $p< 0.01$) patients did not differ in terms of discharge destination, functional outcome, and quality of life. Thus, results are given for the total group of patients.

Primary characteristics

Descriptive information is presented in Table 1. Patients were on average 83 years of age, predominantly female (84%), and admitted from home (58%). Sixty-seven percent had two or more diagnoses in addition to the hip fracture, of which 46% caused functional limitation before fracture. Thirty-four percent of patients had dementia, 54% of patients had musculoskeletal disorders and 11% had concurrent wrist or

Table 2.
Length of Stay in Hospital and Nursing Home, Discharge Arrangements and Type of Residence (n=102).

Variable		Outcome
Days in hospital		
	mean	26
	median (25th-75th percentile)	18 (13-29)
Discharge from hospital to (%)		
	died in hospital	6%
	own home	26%
	home for the elderly	17%
	nursing home	51%
	not discharged	1%
Days in nursing home until discharge (n=25)		
	mean	43
	median (25th-75th percentile)	40 (19-57)
Days in institution (hospital + nursing home)		
Until discharge (n=102)		
	mean	38
	median (25th-75th percentile)	24 (14-53)
Type of residence at 1 month (%)		
	died	4%
	own home	23%
	home for the elderly	15%
	nursing home	35%
	hospital	23%
Type of residence at 4 months (%)		
	died	20%
	own home	36%
	home for the elderly	17%
	nursing home	26%
	hospital	1%

upper arm fractures.

Eighty-seven patients underwent surgery within 1 day after hospital admission, nine patients within two days, and only 3 patients thereafter. At 1 week after surgery 73% of patients were allowed unrestricted weightbearing (at 1 month, 84%; at 4 months, 99%).

Length of stay, Discharge arrangements, Type of Residence, and Costs
Most (74%) patients left the hospital within 28 days (Table 2) but there was wide variation in the time (10% less than 1 week; 10% more than 7 weeks). On discharge from hospital, only 47% were discharged to their type of residence as before fracture. At 4 months, this percentage had increased to 57%. Four months after admission 63% of patients were back home. Figure 1 shows the type of residence where patients were living before and 4 months after hospital admission, with the average length of stay in the hospital and nursing home.
The mean stay in the hospital and nursing home until discharge to home or home for the elderly was 38 days.
Average costs amounted to € 15.338 (which at that time was nearly equivalent to the US dollar) per patient with nearly 50% of the costs attributable to hospital costs and 30% attributable to nursing home costs. Compared with costs before fracture, extra costs caused by hip fracture were € 9306 during a 4-month period.
In multivariate analysis, age, cognitive status at 1 week and number of comorbidities were predictive factors for mortality and being home at 4 months (Table 3).

Walking Ability, Activities of Daily Living, and Instrumental Activities of Daily Living Management.

Walking ability, activities of daily living, and instrumental activities of daily living management are shown in Table 4. Walking ability (Wilcoxon matched pairs signed ranks test, $p = 0.001$) and activities of daily living ($p < 0.0001$) improved significantly between followups, but only 43% of surviving patients had reached the same level of walking ability as before at 4 months, and only 17% of patients had achieved the same level of activities of daily living as before fracture.
Patients, who were admitted to the hospital with acute concurrent wrist and upper arm fractures, did not differ from others in function at 1 month and at 4 months.

Complications

Table 3.
Type of Residence at 4 Months Related to Age, Functioning Before Fracture, Cognitive Status, Number of Comorbidities, and Residence Before Admission.

Variable	Habitat at 4 Months Died	Own Home Elderly	Home for the Home	Nursing	Total
	n = 20	n = 37	n = 17	n = 28	n = 102
	N (%)	N (%)	N (%)	N (%)	N (%)
Age (years)					
65-79	4 (11%)	21 (58%)	5 (14%)	6 (17%)	36 (100%)
80-89	9 (18%)	16 (33%)	8 (16%)	16 (33%)	49 (100%)
>= 90	7 (41%)	0 (0%)	4 (24%)	6 (35%)	17 (100%)
Rehabilitation Activities Profile communication - mobility - personal care before admission					
0 -4	3 (8%)	24 (65%)	5 (14%)	5 (14%)	37 (100%)
5- 14	6 (11%)	12 (32%)	7 (19%)	12 (32%)	37 (100%)
15-36	11 (39%)	1 (4%)	5 (18%)	11 (39%)	28 (100%)
Mini Mental State Examination score at 1 week					
missing	5 (83%)	0 (0%)	0 (0%)	1 (17%)	6 (100%)
0 -12	9 (38%)	1 (4%)	1 (4%)	13 (54%)	24 (100%)
13-18	2 (12%)	6 (35%)	4 (24%)	5 (29%)	17 (100%)
19- 22	3 (23%)	2 (15%)	4 (31%)	4 (31%)	13 (100%)
23-29	1 (2%)	28 (67%)	8 (19%)	5 (12%)	42 (100%)
Number of comorbidities					
0	0 (0%)	5 (83%)	0 (0%)	1 (17%)	6 (100%)
1	1 (4%)	14 (50%)	3 (11%)	10 (36%)	28 (100%)
2	3 (15%)	9 (45%)	6 (30%)	2 (10%)	20 (100%)
3	8 (26%)	6 (19%)	7 (23%)	10 (32%)	31 (100%)
4+	8 (47%)	3 (18%)	1 (6%)	5 (29%)	17 (100%)
Residence before admission					
own home	7 (12%)	36 (61%)	3 (5%)	13 (22%)	59 (100%)
home for the elderly	6 (22%)	0 (0%)	14 (52%)	7 (26%)	27 (100%)
nursing home	7 (44%)	1 (6%)	0 (0%)	8 (50%)	16 (100%)

Table 4
Followup in Walking Ability, (Instrumental) Activities of Daily Living Management, Quality of Life and Cognitive Status.

Variable	Before Admission to Hospital n = 102	1 Week After Admission n = 102	1 Month After Admission n = 97	4 Months After Admission n = 82
walking ability (%)				
not	0%	39%	29%	15%
with personal help	3%	29%	18%	10%
with walking frame		26%	28%	47% 42%
crutches	8%	2%	3%	6%
walking without aids	64%	1%	2%	27%
RAP- communication-mobility-personal care score				
(mean) 0-36	9.3	22.6	18.9	14.5
RAP occupation 0-9	5.0	--	7.3	6.2
MMSE (mean) 0-29		17.7	18.9	20.8
NHP (mean) 0-100				
physical mobility		83	73	57
pain		55	42	27
sleep		33	30	22
energy		63	59	44
social isolation		34	28	28
emotional reaction		34	30	26
COOP/WONCA charts (mean) 1-5				
physical condition		4.9	4.8	4.5
emotional condition		2.6	2.4	2.2
daily work		--	4.1	3.5
pain		2.8	2.9	2.4
overall condition		3.8	3.4	3.3
change in condition		4.0	2.5	2.9
social activities		--	2.6	2.0

RAP = Rehabilitation Activities Profile
MMSE = Mini Mental State Examination
NHP = Nottingham Health Profile
COOP/WONCA charts = Dartmouth COOP Project Charts revised by The World Organiziton of National Colleges, Academies and Academic Associations of General Practioners/Family Physicians (WONCA).

Complications are shown in Table 5. Local complications with osteosynthesis material, such as loosening, luxation or break of screw (eight times in six patients), led to reoperation in all patients and limitation in function until 4 months after fracture in five patients. Wound infections occurred in 11 patients (of whom four died), and reoperations were necessary in six patients (of whom two died). A frequently occurring general complication was anemia (47%). Forty-four patients (43%) were given a blood transfusion. Urinary tract infection occurred in 44% of patients (treated with antibiotics).

Lethal general complications were pneumonia (three patients), dehydration (three patients), stroke (two patients), pulmonary embolism (two patients), myocardial infarct (two patients), shock (two patients),sepsis (two patients), heart failure (one patient), mamma carcinoma (one patient), cachexia (one patient) and intestinal obstruction (one patient).

Health-Related Quality of Life

Nottingham Health Profile scores were obtained from the patient (75%) or by a proxy (25%). Significant improvement of physical mobility and pain ($p < 0.0001$) occurred between 1 week and 1 month and between 1 month and 4 months (Table 4). All other dimensions improved between 1 week and 4 months.

Compared with reference values at 4 months, significant differences were found in physical mobility ($p < 0.001$), social isolation ($p = 0.001$), sleep ($p = 0.008$), and emotional reactions ($p = 0.02$). The Dartmouth COOP Functional Health Assessment Charts indicated that pain decreased between 1 month and 4 months ($p = 0.001$). Physical mobility improved between 1 week and 1 month ($p = 0.01$) and between 1 month and 4 months ($p = 0.006$). Patients felt better overall between 1 week and 1 month but not after 1 month. Compared with reference values, significant differences at 4 months were found in daily housekeeping and physical condition ($p < 0.001$).

3.4. Discussion

Patient Characteristics

This elderly cohort study included patients living at home, those living in nursing homes, and those living in homes for the elderly. This accounted for the advanced

Table 5.
Complications occurring in 102 patients until 4 months after hospital admission for hip fracture by severity.

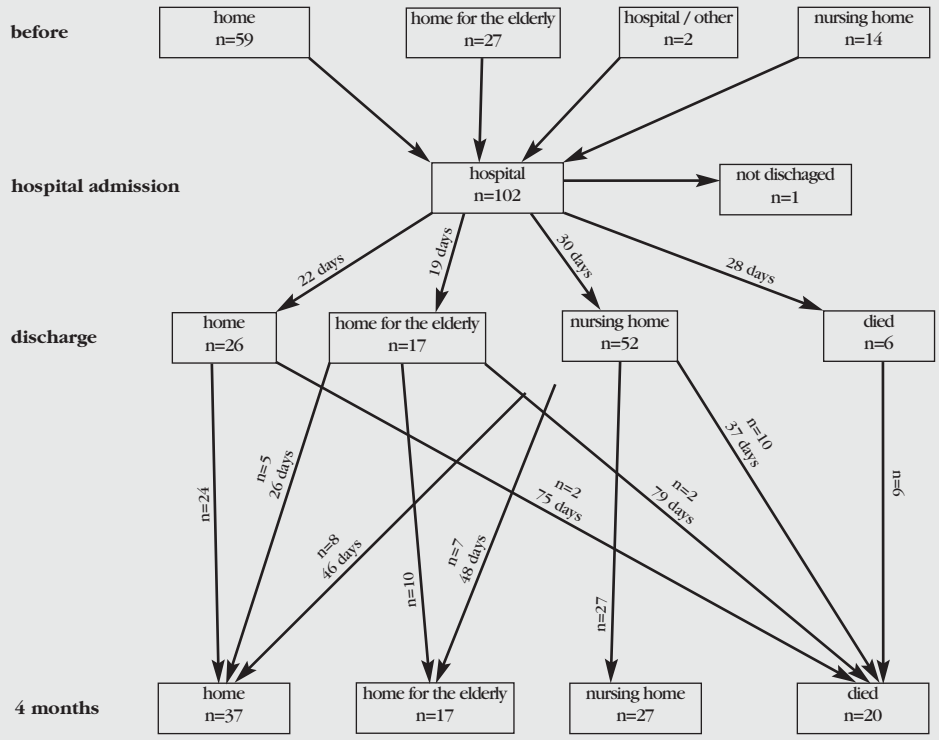
Diagnosis	Number of Complications			
	Moderate	Severe	Total	% of Patients
Local disorders	14	15	29	22%
wound infection/hematoma	11	4	15	
loosening osteosynthesis/luxation	1	7	8	
Circulation disorders	55	7	62	54%
sepsis/dehydration	4	5	9	
anemia	49	1	50	
Cardiovascular disorders	24	15	39	31%
myocardial infarction, heart failure, arrhythmias	17	8	25	
pulmonary embolism/thrombosis	2	2	4	
cerebrovascular accident	1	5	6	
Pulmonary disorders	12	5	17	15%
pneumonia	10	4	14	
Urinary tract disorders	70	3	73	50%
infection	60	1	61	
Pressure ulcers	17	12	29	28%
Gastrointestinal disorders	16	7	23	22%
bleeding	4	2	6	
Psychiatric disorders	13	13	26	23%
delirium	9	5	14	
Other	28	9	37	28%
Total	249	86	335	92%

age and the high proportion of patients with a diagnosis of dementia (34%).

Length of Stay, Discharge Arrangements, Type of Residence, and Costs

Hospital length of stay was considerable (26 days), and only 47% of patients were discharged to the residence they had occupied before fracture. These aspects depend on the way geriatric rehabilitation and long-term care of the elderly is orga-

Fig 1.
Residence of 102 Patients with Hip Fracture Before and 4 Months After Hospital Admission.



nized. This differs between countries. For instance, hospital length of stay in the United States fell from 22 to 13 days after implementation of the prospective payment system, with the result that more patients were discharged to nursing homes and that more patients remained in the nursing home 1 year after hospitalization.[12] The patients were followed up for 4 months because no additional recovery is expected after this time.[9,19] Mortality at 4 months was 20%, similar to figures reported in the Netherlands[21,34] and in the United Kingdom.[35]

In agreement with other studies, age, number of comorbidities, and cognitive state at 1 week predicted mortality at 4 months.[4,10,25,27,35] Contrary to other studies, gender was not found to be clearly related with mortality. This probably is because of the high mean age and high percentage of women included in this study. Nearly 40% of the patients with dementia, of whom 80% were living in institutions, died within

4 months. This finding is in agreement with the earlier reported relationship between poor cognitive state and mortality.[4,11,27] The predictive factors found in this study (age, cognitive status, and number of comorbidities) for those returning home and functioning 4 months after fracture are consistent with results from previous research.[22,24,28,31,37]

Borgquist et al[5] reported average costs up to 4 months after fracture to be € 11.500 per patient (1991, corrected for inflation € 13.000 in 1998) and, as in the current study, 80% of total costs accrued in institutions (50% in the hospital and 30% in nursing homes). Especially patients who are frail and elderly incur health care costs without sustaining a hip fracture. The incremental costs can be estimated by a comparison of postoperative and preoperative costs. Brainsky et al[7] showed that the costs increased for the first 6 months and then decreased so that they approached levels before fracture by the end of the first year. Health care costs before fracture in the current study were substantial, because of the older mean age of the patients.

Walking Ability and Activities of Daily Living

Only 43% of surviving patients recovered at 4 months to the same level of walking ability as before fracture which is consistent with some other studies.[21,23] Only 17% of patients regained their previous performance of activities of daily living, which is similar to reported recovery in elderly patients living in an institution.[13] It is difficult to answer whether more aggressive rehabilitation would have improved function in this group of patients or in a subset of them. Certainly, for a subset of them, especially the patients who have dementia and are very old, the outcome was expected to be poor, and efforts at rehabilitation may have been futile. All patients were rehabilitated in the hospital and after discharge in the nursing home or at home with the help of physiotherapists. The current authors do not know whether the patients who have dementia and are very old would have had even worse outcomes without these rehabilitation efforts. However, the authors also do not know whether more aggressive rehabilitation of the patients with more potential for improvement (the younger, cognitively intact patients with limited comorbidity) would have improved their outcome. Because inclusion in this study was unselected, both types of patients were represented (Table 3). Additional study is needed to answer these questions.

Complications

Only 8% of patients had no medical complications within 4 months, in contrast with the findings of Koot[21] in a followup of 1 month (60% no complications) and Vajanto et al[36] in a followup of 1 year (72% no complications). Frequently occurring complications were postoperative anemia and urinary tract infection.

Some investigators may accept a blood transfusion as a normal postoperative procedure. In a large French study, urinary tract infection occurred in only 22% of patients.[1]

Equal percentages of serious complications such as myocardial infarction and pulmonary embolism, have been reported, but lower percentages of respiratory complications, pressure sores and stroke have been reported.[32] Differences may be attributable to any complication leading to treatment, not only those directly related to the fracture, being recorded in the current study. The high occurrence of general complications also could be because of the frailty of the patients included in the study.

Health-Related Quality of Life

The Nottingham Health Profile and Dartmouth COOP Functional Health Assessment Charts have been used previously in measuring subjective health in chronic conditions but not frequently in followup of patients with hip fracture.[6,8,30]

As expected, a large proportion of patients experienced problems with physical mobility and pain, but the patients also seemed to experience more subjective social isolation and emotional problems than in a reference population.

It is possible that patients had reduced quality of life before their fracture. Patients or their relatives were asked about functioning before the fracture. Only 64% of all patients walked without aids before their fracture. It is likely that this had some influence on quality of life (social isolation). Unfortunately, it is difficult to measure quality of life retrospectively with the Nottingham Health Profile or the Dartmouth COOP Functional Health Assessment Charts. An important observation in this study was that both instruments were sensitive to changes in time in nearly all dimensions and seem to be valuable in the evaluation of hip fracture rehabilitation.

Limitation in Study Design

A limitation of the current study is that the number of patients was relatively small. This is because of the time-consuming followup to assess the patients' function and type of residence.

Patients in institutions before fracture were included and this made the total group

fairly heterogeneous. However, this study tried to give a comprehensive account of outcome after hip fracture, and in the Netherlands 40% of patients are institutionalized before experiencing a fracture. This does not differ from the proportion reported from Scandinavian countries,[34] but fewer patients are institutionalized before their hip fracture in the United States and England (20%-30%).[16,35]

In the Netherlands, elderly people live in homes for the elderly when they need assistance with structuring their daily life or have problems with their activities of daily living. Patients are admitted to nursing homes when they need 24- hour nursing care because of dementia or physical disability. Other studies from the Netherlands reported the same percentage of patients living in a home for the elderly (25%) or nursing home (15%) before hip fracture as were seen in the current study.[21,34]

Another potential compromising factor for interpreting the results was the 22% nonparticipation rate. Although more nonparticipants came from home, their age and gender were not different from the participants. In addition, mortality (21%) and type of residence at 4 months of the nonparticipants did not differ from the participants. Thus, the current authors expect that other outcomes of nonparticipants, such as function and quality of life, also would not have been very different.

In the current series of patients with a fresh hip fracture, the high proportion of patients with dementia, the high proportion of patients who lived in an institution, and the severity of comorbidity was accompanied by substantial mortality and poor rehabilitation results. The high occurrence of medical events and the fact that 1/4 of the patients subsequently suffered functional impairment, support the need for intensive medical attention in rehabilitation after hip fracture. Early specialized rehabilitation could lead to better outcome. The effect on outcome and costs of earlier discharge of patients with hip fracture from the hospital to home or to surroundings with special rehabilitation facilities should be investigated.

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Appendix

1. Rehabilitation Activities Profile

activity		score	activity		score
Communication			Personal care		
	expressing	0-3		eating/drinking	0-3
	comprehending	0-3		washing/grooming	0-3
Mobility				dressing	0-3
	maintaining posture	0-3		undressing	0-3
	changing posture	0-3		maintaining continence	0-3
	walking	0-3	Occupation		
	using wheelchair	0-3		providing for meals	0-3
	using transport	0-3		household activities	0-3
				leisure activities	0-3

response options : performs activity with : no difficulty (0); some difficulty (1);much difficulty/help (2); not (3)

2. Severity rating scale

Comorbidity

0. **Complete Health**: Neither complaints about symptoms nor evidence of signs or functional limitation
1. **Good Health** : Evidence only of signs without related symptoms (spontaneous complaints or complaints when asked); no functional limitation
2. **Disturbed Health Without Functional Limitation** :
    A. Patient complains about symptoms without related signs that disturb his/her daily activities without functional limitation.
    B. Patient complains about symptoms accompanied by evidence of signs that disturb his/her daily activities without functional limitation
3. **Moderate Functional Limitation**: Evidence of symptoms and related signs; patient refers to some functional limitation that interferes with instrumental activities of daily living (he/she experiences some change in his/her normal roles or habits).
4. **Severe Functional Limitation** : Evidence of symptoms and related signs; additionally, there is need for supervision or assistance in one or more basis activities of daily living because of functional limitation.

Complications

Nurse-physician monitoring (N-PM)

therapeutic intervention (TI)

residual functional impairment (RFI)

Class A: complication requiring < 1 day of N-PM, without TI, without evident RFI

Class B: complication requiring TI and 1-7 days of N-PM, without evident RFI

Class C: complication requiring TI and 8-21 days of N-PM, without evident RFI

Class D: complication associated with RFI and requiring TI, regardless of duration of N-PM

3. COOP/WONCA charts

Physical Condition

What was the most strenuous level of physical activity you could do for the last 2 minutes ? 1. very heavy; 2. heavy; 3. moderate ; 4.light ; 5. very light.

Emotional Condition

How much have you been bothered by emotional problems such as feeling unhappy, anxious, depressed, irritable? 1. not at all; 2.slightly; 3.moderately; 4.quite a bit; 5. extremely

Daily Work

How much difficulty did you have doing your daily work, inside and outside the house, because of your physical health or emotional problems ? 1.no difficulty at all; 2.a little bit of difficulty; 3.some difficulty; 4.much difficulty; 5.could not do.

Pain

How much bodily pain have you generally had ? 1.no pain; 2. very mild pain; 3. mild pain; 4. moderate pain; 5. severe pain.

Overall Condition

How would you rate your overall physical health and emotional condition ? 1 excellent; 2. very good; 3. good; 4. fair; 5.poor.

Change in Condition

How would you rate your physical health and emotional condition now compared with 4 weeks ago ? 1. much better; 2. a little better; 3. about the same; 4. a little worse; 5. much worse.

Social Activities

To what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors or groups? 1. not at all; 2. slightly; 3. moderately; 4. quite a bit; 5.extremely.