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SICK-ROLE AND ATTITUDE TOWARDS DISEASE AND WORKING LIFE TWO MONTHS AFTER A MYOCARDIAL INFARCTION

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ABSTRACT. Sick-role and attitude towards disease and work two months after a first myocardial infarction (MI) were studied in relation to social, psychological and somatic factors prior to, during and after the MI in 201 consecutive male patients. Questionnaires and a brief interview covered psychological and social data. Somatic data were registered in a standardized medical examination. New concepts were introduced after factor analysis of the psychological variables. Two out of three patients displayed avoidance behaviour. Seventy per cent had restricted their everyday activities. The leisure time was dominated by passivity. Overprotection was frequent. Sick-role behaviour was significantly related to emotional upset, preoccupation with the health and self-reported coronary symptoms while the shortage of relationships to somatic and cardiac factors was notable. The patients attributed the onset of MI to work-related factors. Work dissatisfaction was an aspect of a general negative attitude towards life and was more frequent among patients with emotional symptoms. The psychological care ought to be improved in order to prevent long-term disability.

Key words: Myocardial infarction, emotions, angina pectoris, sick role, leisure activities, self-assessment, rehabilitation, factor analysis

Psychosocial outcome after a myocardial infarction (MI) has frequently been discussed in terms of return to work (4, 23), emotional reaction (3, 31), or sexual adjustment (12, 15). The negative effect on readaptation of inactivity (26) and a pessimistic attitude towards the future (24, 38) have been demonstrated. The psychological benefits of early mobilization (1, 11) and physical training (10, 29) have been recognized. The importance of the family has been stressed (20). Attitude variables as life dissatisfaction (27), job dissatisfaction (32) and health perception (9) are listed as psychosocial risk factors in respect of outcome after MI. The patient's causal explanation of his MI has been described (6) and related to behavioural outcome (28). Reports of adaptation in the sense of everyday-life, leisure-time activities and social contacts are, however, rare.

Although many psychosocial factors are related to each other a general measure of outcome is inadequate. Outcome variables have to be examined separately since the disability of one patient is not similar to that of another (21).

The purpose of this study is to describe sick-role behaviour and attitude towards disease and working life two months after a first MI in relation to somatic, social and psychological factors prior to, during and after the MI.

PATIENTS AND METHODS

Two-hundred and one consecutive male, Swedish speaking patients between 32 and 60 years with a first MI were studied. Only patients employed before the onset of MI and who had not been sick-listed for more than 180 days were included (34). Myocardial infarction was diagnosed according to strict criteria (7). Questionnaires were administered by a psychologist together with a brief interview about background data 5 to 8 weeks after the MI. A medical examination by a physician at the Post-Myocardial Infarction Clinic (PMIC) was performed three months after the MI (8). One year after the infarction the patients were reinvestigated. Psychosocial and somatic data from the time before onset of the acute episode and from the acute and convalescence phases were registered including social contacts, everyday and leisure activity. Severity of the infarction was determined according to a method by Vedin (23). New psychological concepts, over-protection, avoidance behaviour, causal explanation of MI, work satisfaction and working pace, were created by factor analysis (Table I). Applicable parts of the questionnaires were presented as a comparison to a non-selected group of 175 healthy, Swedish-speaking, able-bodied men aged between 40 and 50 years who were involved in a population study (35). A complete methodological account has been given earlier (34).

Statistical methods

Standard statistical programs were used to calculate means, standard deviations and product-moment correla-

Table I. *Definition of new concepts*

Variable	Concept
Avoidance pattern I	Avoiding alcohol Avoiding sauna baths Avoiding air travelling
Avoidance pattern II	Avoiding walks in the woods Avoiding going into the country side
Avoidance pattern III	Avoidance of being alone
Overprotection	Understanding Consideration Practical help Protection from physical activity Treated in a different way after MI
Causal explanation of MI	
Work dissatisfaction	Conflicts at work Tedious work situation Unpleasant working environment
Work demands	Responsibility Time urgency Trying work situation
Habits of living	Smoking Drinking habits Eating habits
Attitude towards work	
Work satisfaction	Stimulation Variety Work management Working environment
Time urgency	Time urgency Working speed
Physical work load	Physical heavy work

tion coefficients (13). $p \leq 0.05$ was considered significant, two-sided test. The responses of the questions were organized according to ordinal scales. Fisher's non-parametric permutation test was used to compare the patient and reference groups (2). The correlation between age on one hand and leisure activity, attribution of MI and attitude towards work on the other hand was studied. The results of the two groups were pooled by the technique of Mantel (17). Thereby it was checked if age had to be controlled. The influence of age was then eliminated by the same technique. In order to reduce the amount of variables and to isolate and strengthen the psychological concepts factor analysis was used (5).

RESULTS

Everyday activity and attitude towards the future

The MI implied altered routines of everyday life. A considerable change of the daily activities was reported by 37% of the patients and another 33% had changed to some extent. The most predominating change was a decrease in physical activity mentioned by 47%. Thirteen per cent took part less in household activities and 6% had less interest in leisure activities.

Table II. *Response to the question "How do you spend your leisure time?" (MI patients N = 201 and reference group N = 175)*

	MI		Ref.	
	Very much (%)	To some extent (%)	Very much (%)	To some extent (%)
Watching television	38	61**	22	77
Family life	45	49	39	54
Taking walks	34	58	23	70
Reading books	38	53**	21	69
Resting	28	63**	6	66
Having guests	4	71*	5	81
Taking drives	12	54	7	71
Going to parties	1	56**	3	73
Going to the country house	20	29**	27	44
Outdoor life	7	36**	11	63
Reading specialist literature	7	31**	9	50
Going to the cinema	2	24**	4	48
Clubs and associations	4	18**	5	35
Courses	–	15**	6	37

* The difference between MI and ref. group is significant $p \leq 0.05$.
** The difference between MI and ref. group is significant $p \leq 0.01$.

Half of the patients were dissatisfied having had to modify their daily routines. In answer to the question "What changes do you want?" 85% were anxious to go back to work, 62% wanted more activities, 60% wanted to be more occupied, 53% wanted more contact with other people and 45% wanted to spend more time with their family. All the same a majority, 64% had adjusted to convalescence and were quite contented with ongoing activities. Forty-four per cent were satisfied with their present life in general, 42% were neither satisfied nor dissatisfied and 13% were dissatisfied.

In answer to the question "How much contact do you have with the following persons in comparison to before onset of the MI?" 46% had an increased contact with the family, 26% with close friends and 16% with other friends. A decrease was noted by 20% concerning close friends and by 31% as regards other friends.

Table III. *Response to the question "What factors do you avoid because of your MI?" (MI patients N = 201)*

	Very much (%)	To some extent (%)
Sauna baths	67	13
Alcohol intake	51	26
Driving a car	28	40
Travelling by air	43	10
Walks in the wood	24	29
Going to the country side	16	37
Being alone	13	37

In response to the question "What is your attitude towards the future?" 55% had an optimistic outlook towards the future, 39% were indifferent and 6% pessimistic.

Leisure-time activity

Leisure-time activity should be expected to differ between the MI and reference groups since the patients were sick-listed (Table II).

Sedentary activities as resting, reading books and watching television were over-represented among the patients, while the leisure time of the reference group was varied, extrovert and work related with more emphasis on physical activity.

When the items in Table II were factor analyzed no obvious factor came out. This could be due to limitations of the questionnaire and general difficulties in the measurement of leisure time activity.

Avoidance behaviour

After the MI many patients displayed avoidance behaviour (Table III). Two avoidance patterns (Table I) were distinguished after factor analysis of the items in Table III. Avoidance of being alone constituted an aspect of its own.

Table IV. *Response to the question "How are you treated by your family and friends after the MI?" (MI patients N = 201)*

	Much more than before (%)
Protected from physical exertion	80
Treated with understanding	68
Shown consideration	67
Given practical help	62
Given good advice	49
My responsibility is taken away	47
Shown compassion	36
Overprotected	23
My initiative is taken away	14
Treated as an invalid	10

Table V. *Significant relationships ($p \leq 0.05$) between factors prior to, during and after MI and altered ways of daily living*

	Correlation coefficient	
Factors prior to MI	–	
Factor during MI	–	
Factors after MI	0.43***	Health preoccupation
	0.32***	Emotional instability
	0.32***	Subj. limiting coronary symptoms
	0.30***	Overprotection
	0.26***	Subj. limiting emotional symptoms
	0.19**	Dissatisfaction with present life
	0.19**	Sexual decrease
	0.18**	Avoidance pattern I
	0.17	Subj. frequency of chest pain
	0.16	Avoidance pattern II
	0.15	Avoidance ofbeing alone

** $p \leq 0.01$, *** $p \leq 0.001$.

Overprotection

Not only the patient but also members of his family and friends were anxious and concerned (Table IV).

An index of *overprotection* (Table I) was created after factor analysis of the items in Table IV.

In spite of the apparent overprotection not more than 27% considered themselves treated in a different way after the MI.

Sick-role behaviour

The previous factors altered ways of daily living, restricted behaviour patterns e.g. avoidance, a leisure-time dominated by passivity and/or caution and an overprotective attitude on behalf of the MI patient's family reflected various aspects of sick-role and sick-role behaviour as well as the patient's attitude towards the future and his present life situation.

Altered ways of daily living were related to emotional factors and had no relation at all to past or present somatic illness or cardiac symptoms assessed by the physician (Table V).

The different aspects of avoidance behaviour were interrelated. Avoiding walks in the woods and

Table VI. *Significant relationships ($p \leq 0.05$) between factors prior to, during and after MI and a pessimistic attitude towards the future*

	Correlation coefficient	
Factors prior to MI	0.16	Somatic illness
	0.16	Somatic symptoms
	0.16	Previous emotional complaints
	0.15	Marital status (single)
Factor during MI	0.22**	Use of psychoactive drug
Factors after MI	0.33***	Neurotic traits
	0.29***	Emotional instability
	0.28***	Work dissatisfaction
	0.24***	Use of psychoactive drugs
	0.23***	Subj. limiting emotional symptoms
	0.21**	Dissatisfaction with present life
	0.19**	Health preoccupation
	0.16	Low work motivation
	0.16	Frequency of angina pectoris
	0.15	Physical heavy work

** $p \leq 0.01$, *** $p \leq 0.001$.

Table VII. *Significant relationships ($p \leq 0.05$) between factors prior to, during and after MI and dissatisfaction with present life situation*

	Correlation coefficient	
Factors prior to MI	0.21**	Age
Factor during MI	–	
Factors after MI	0.33***	Neurotic traits
	0.31***	Emotional instability
	0.24***	Subj. limit emotional symptoms
	0.21**	Pessimism
	0.19**	Subj. frequency of chest pain
	0.19**	Altered ways of daily living
	0.17	Health preoccupation
	0.16	Hectic work situation
	0.14	Readmission

** $p \leq 0.01$, *** $p \leq 0.001$.

going into the country-side were related to health preoccupation, overprotection and severity of the infarction ($p \leq 0.01$). Avoidance of being alone was primarily associated with emotional distress ($p \leq 0.001$), health preoccupation ($p \leq 0.001$) and neurotic traits according to Eysenck Personality Inventory ($p \leq 0.001$).

Overprotected patients were more often health preoccupied ($p \leq 0.001$), emotionally distressed ($p \leq 0.001$) and they were more likely to have changed their daily routines ($p \leq 0.001$).

Both pessimism and dissatisfaction with present life situation were associated with psychological factors (Tables VI and VII). Pessimism was associated with a general attitude of giving up with a lowered work motivation and work satisfaction and seemed to have generated out of factors in existence before the MI.

The shortage of relationships between sick-role behaviour and somatic illness and coronary symptoms was remarkable.

Causal explanation of MI

Work related factors were the most frequent explanatory causes of MI. Smoking, an established risk factor in relation to CHD, was less often mentioned although 76% of the patients were smokers at the onset of MI. The healthy subjects regarded many more factors as potential risk factors, e.g. eating and drinking habits and conflicts at work or in the family compared to the MI patients (Table VIII).

By factor analysis of the items in Table VIII three patterns, *work dissatisfaction*, *work demands* and *habits of living* as a cause of MI emerged (Table I). Work dissatisfaction as a cause of MI was related to discontent with the work situation ($p \leq 0.05$) and to a low work motivation ($p \leq 0.01$). Work load as an explanatory cause was related to a hectic work situation ($p \leq 0.001$), high socioeconomic status ($p \leq 0.01$) and previous somatic morbidity ($p \leq 0.001$). Habits of living as a cause of MI was related to smoking ($p \leq 0.01$) and a high tobacco consumption ($p \leq 0.001$).

Attitude towards work

Both the MI and the reference group seemed to be contented with their work situation (Table IX). The MI patients described their work as physically more heavy and their work situation as more hectic, irregular and boring in comparison to the reference group.

The MI patients and the healthy subjects were asked "What does gainful work mean to you except from the salary?" Comradeship, improved self-es-

Table VIII. *Response to the question "What factors do you think caused/cause your/a myocardial infarction?" (MI patients N = 201 and reference group N = 175)*

	MI		Ref.	
	Very much (%)	To some extent (%)	Very much (%)	To some extent (%)
Time urgency at work	46	39	61	34
Responsibilities at work	35	48	23	63
Trying work conditions	34	45	54	43
Smoking	28	40	50	47
Eating habits	7	49	36	57
Physical heavy work	12	29	8	33
Heredity	7	27	9	68
Conflicts at work	7	22	34	52
Drinking habits	3	20	22	59
Unpleasant work conditions	5	18	31	52
Conflicts in the family	7	15	31	52
Tedious work situation	2	15	11	45

teem, variety and stimulation were emphasized very much by 60% to 70% of the MI patients and the reference group. Patient oriented answers as "for reasons of health" and "not feeling like a disabled person" were mentioned by 47% and 37% of the patients compared to 40% and 26% in the reference group.

In both groups 80% declared that to be able to work was an important aspect of the emotional and physiological well-being. Only 6 patients and 2 members of the reference group claimed that their ability to work was of no or inconsiderable significance. When asked about worries in the future 25% were very much concerned about their future working capacity and another 45% worried somewhat about it.

Three work related factors, *work satisfaction*, *time urgency* and *physical work load* became apparent when the work conditions were factor analysed (Table I).

Work dissatisfaction was associated with emotional problems before, during and after the MI and with restricted behaviour and pessimism (Table X). There was also a relationship to self-reported coro-

Table IX. *Response to the question "How do you experience your work situation and work environment?" (MI patients N = 201 and reference group N = 175)*

	MI	Ref.
	Very much (%)	Very much (%)
Full of variety	68	72
Good work management	68	69
Responsible	68	67
Stimulating	66	79**
Pleasant work environment	64	68
Hectic	61	43**
Irregular	59	47**
Physically heavy	19	9**

** The difference between MI and ref. group is significant $p \leq 0.01$.

Table X. *Significant relationships ($p \leq 0.05$) between factors prior to, during and after MI and work dissatisfaction*

	Correlation coefficient	
Factors prior to MI	0.15	Previous somatic symptoms
	0.14	Previous emotional complaints
Factor during MI	0.21**	Use of psychoactive drugs
Factors after MI	0.36***	Low work motivation
	0.36***	Work dissatisfaction as a cause of MI
	0.29***	Subj. frequency of chest pain
	0.28***	Pessimism
	0.27***	Neurotic traits
	0.25***	Physically heavy work
	0.23***	Emotional instability
	0.22**	Subj. limiting coronary symptoms
	0.18**	Subj. limiting emotional symptoms

** $p \leq 0.01$, *** $p \leq 0.001$.

nary symptoms but not to angina pectoris rated by the physician. Work dissatisfaction and a low work motivation were highly related to each other.

DISCUSSION

Two to three months after onset of the acute episode was a crucial time considering adjustment and return to normal life. In the case of disability rehabilitation measures have to be arranged. Since one aim was to study the rehabilitation outcome after a heart attack, patients on long-term sick-leave, patients retired due to sickness and patients with a reinfarction were excluded. For the same reason an upper age-limit was set at sixty years. All patients in the study were treated in a standardized way at the PMIC (8).

The leisure time was dominated by passivity and activities implying physical strain had been abandoned. A similar pattern with a decrease of leisure activities among MI patients has been described (22). Altered daily routines and inactivity might cause feelings of frustration, inferiority and dependence reinforcing the emotional upset. The patient who spent his convalescence watching television felt at loss and lacked the structure of life when unable to work (36). Inactivity and inability to perform household activities rather than coronary symptoms have been described to cause depression (16, 26).

Behavioural limitations were associated with self-reported chest pain but not with angina pectoris rated by the physician. Otherwise angina per se has been described to lead to a reduced exertion at home and during leisure time and a narrowing of social relations (18).

Many patients were satisfied with their present life situation in spite of considerable changes of everyday life. Survival and health probably had greater significance than other needs and overshadowed the negative consequences of the MI. Dissatisfaction was, however, obvious as regards specific changes of the daily activities. Maybe the younger patient was more inclined to express discontent since dissatisfaction was related to age. The younger the patient the more frustrating the prospect of future disability and/or a shortened life expectancy. Discontent might be a manifestation of pessimism and emotional distress. Patients with negative feelings towards the illness and the future have been described to have a poor outcome (24, 38).

The MI patient was met by an overprotective attitude of his family and friends which might reinforce sick-role behaviour as well as anxiety, diffidence and insecurity. The fact that only a minority felt differently treated after the MI might be due to inability to recognize alterations regarding the own person. It has been described how uncertain the family was about how to behave (19, 30). The role of the wife as a major determinant of the patient's readjustment during convalescence has been indicated (20). Not only the patient but also his family are in need of counseling and information about how to behave and the long-term implications of the illness.

The patient's causal explanation of his MI deserves attention. The present results demonstrated a strong association with the work situation. It has been reported that male Swedish MI patients exclusively related their periods of stress to their working conditions (25). Tension at work, at home or in general was the most common causal explanation used by MI patients in another report (28). The MI patients seemed to answer out of personal reasons emphasizing attribution of MI to work related factors while the reference group mentioned many more general explanatory causes of a heart attack. It could be expected that smokers would deny smoking as a cause of MI thus putting the blame outside themselves. The fact that the MI patients, a majority of them were smokers before the MI, mentioned smoking less often than the reference group might reflect a tendency to understimate the significance of smoking in relation to MI.

Work dissatisfaction was equal to a more general, negative, pessimistic and discontented attitude towards life which occurred in patients inclined to have emotional symptoms. Lack of work satisfaction among MI patients in comparison with controls has been reported (14, 32). The significance of work dissatisfaction has led to a place among the psychosocial risk factors (32) and a thorough exploration of the patient's actual work situation and his attitude towards the former job can be valuable.

Disability and restricted behaviour can be expected to be related to the extent of the impairment and to functional limitation due to coronary symptoms. The low incidence of coronary and somatic factors in association with sick-role behaviour is remarkable. Emotional disturbance, though natural and logic, is a secondary phenomenon to the diagnosis of MI and is quite likely easier to prevent than

somatic restrictions. Poor readjustment in association with emotional factors may be considered as inadequate patient care. To reach an optimal level of restoration intervention must be directed to the patient's psychological reaction, attitude and sick-role behaviour in addition to the cardiac condition.

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