

A METHOD TO CALCULATE NURSING LOAD

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ABSTRACT. The time used by the staff for the nursing of each patient is shown to be intimately correlated to certain arithmetically evaluable functional impairments of the patient. Registration of these impairments was used as a method for calculating nursing load in the in-patient clientele of a geriatric clinic. The mean nursing load score was calculated for different diagnoses and for different groups of patients judged suitable for treatment at home, in a home for the aged, in a nursing home or in a hospital. This grading of the functional impairments of the patient is easily and rapidly performed. The method therefore seems to be of value to calculate the time involved for the staff in certain types of hospitals and nursing homes. Such an evaluation is of great value for hospital administrations and hospital planning and is also essential in order to be able to objectify the effects of treatment.

I. DEVELOPING THE METHOD

It is difficult to evaluate the load on a nursing staff objectively and arithmetically when nursing various patient types and patient groups. Such an evaluation is of great value for hospital administration and hospital planning and is also essential in order to be able to objectify the effects of treatment. This concerns mainly therapy which, although not leading to the patient being discharged, at least makes him easier to nurse.

The concept nursing load contains three main components: time, physical effort and mental effort on the part of the nursing staff. During the investigation reported here, an attempt was made to evaluate arithmetically the subjective view of the staff concerning the nursing load. This grading was then illustrated by a study of the time used by the staff for each patient. The investigation was carried out on the in-patient clientele in Geriatric Clinic II, Vasa Hospital. The method for calculating nursing load was applied by the authors in a study of the in-patient clientele in this

hospital. The aim of that part of the study was to compare the nursing load score in different diagnoses, and also in groups of patients judged suitable for treatment at home, in a home for the aged, in a nursing home or in a hospital.

METHODS

By discussing with various groups of the staff, attempts were made to determine the factors that increase the nursing load. These factors were graded in scales 1-5 (Table I). The discussion were carried out in each ward separately, and the results of the discussions were then compared. We found that the opinions of the various wards were in almost complete agreement. At the totalling of the score for each patient, a number that varied between 0 and 41 was obtained. This score is hereafter referred to as nursing load score.

The time needed by the staff for the direct nursing of 65 patients was continuously analysed for three 24-hour periods. The time study was carried out as follows: each patient had a chart on which the staff noted nursing tasks, time taken, and staff category. Only direct patient contacts were recorded. The time needed for desk work, such as staff administration and contact with relatives, was not recorded. Large-scale cleaning of the department was not recorded, but extra cleaning in connexion with the patient soiling was; time for kitchen work was not noted, but time needed for serving food and for removal of food trays was; the work at the medicine cabinet was not recorded, but the time taken to dispense medicine was. The functions of the doctor were not included in the time study, but time devoted for rounds by the staff was.

The aim of the investigation was carefully explained to the members of the staff before the time study; they were assured that it was not a control of their willingness or ability to work. During the day, a doctor was permanently present in the ward.

RESULTS

Figure 1 shows the comparison between staff time consumption and nursing load score. The relation was statistically significant ($p < 0.001$). A closer study of this material also showed that the

Table I. Nursing load factors and gradings. For definitions, see Table V

Disturbing	
periodically	3
permanently	5
Faecal incontinence	
periodically	3
permanently	5
Urinary incontinence	
periodically	3
permanently	5
indwelling catheter	2
Bedsore	
small	2
large or multiple	4
Dressing and undressing	
with some help	1
with much help	3
completely unable without help	4
Personal hygiene	
with some help	1
with much help	3
completely unable without help	5
Toilet visits	
with some help	1
with much help	3
completely unable without help	4
Walking ability	
with some help	1
with much help	3
with walking chair	2
confined to chair	3
confined to bed	5
Feeding himself	
with some help	1
with much help	3
completely unable without help	4

variations in the material did not significantly deviate from what randomly occurs if the regression is linear.

The equation given in Fig. 1 shows that the time consumption of the staff = $4.44 \times$ the nursing load score + 32.9 min.

Table II shows that the actual time that the nurse spends on each patient is independent of the nursing load score of this patient. For other staff categories, however, the time consumption grows with the nursing load score.

To analyse the types of duties that lie behind the increase in nursing time at an increasing degree of nursing load, the staff work was divided into three groups. Group I contains those tasks performed for each patient, irrespective of his nursing load, that can be characterized as the lighter ones, such as conversation with the patient, giving medicine, supplying food and possibly feeding. Group II contains the medium-

heavy tasks for each patient, such as bringing washing water and possibly washing the upper parts of the body, bladder flushing and wound dressing. Group III contains the heavy or more unpleasant tasks, such as bed making, turning the patient, moving him to a chair, and washing the lower parts of his body. It must be observed that a light task for a patient who is heavy to nurse can very well be heavier than a heavy task performed for a patient who is easily nursed.

The patients were divided into 4 groups according to nursing load. The principle for this division will be explained below. As can be seen in Table III, the percentage of time consumption for light, medium-heavy, and heavy tasks was the same, irrespective of nursing load score.

DISCUSSION

As pointed out in the introduction the concept nursing load contains three part-components: time, physical effort, and mental effort. When we started the elaboration of the method for calculating

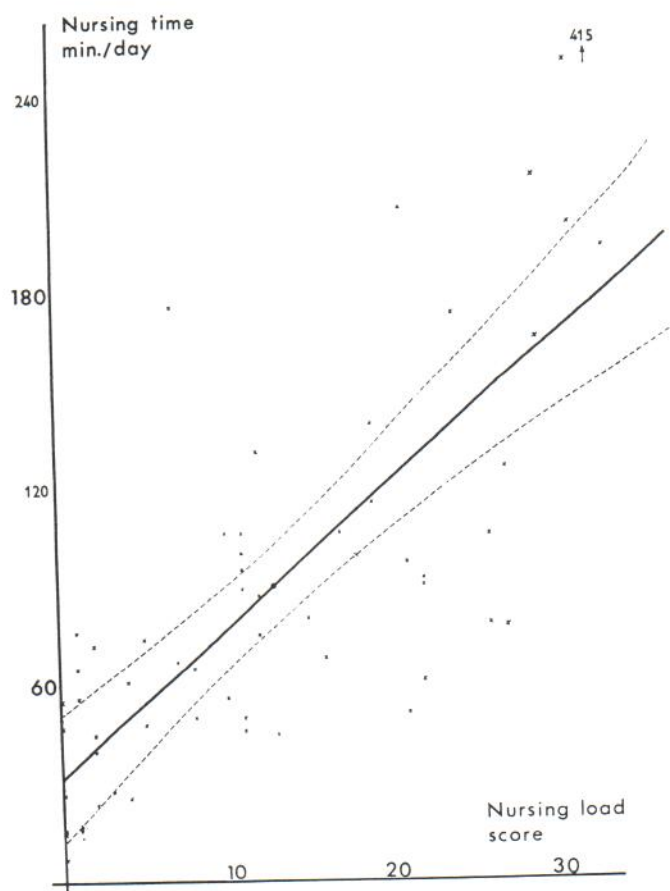


Fig. 1. Relation between nursing time and nursing load score for 69 patients. Regression line with 95% confidence limit. $y = 4.44 \times X + 32.94$, $b = 4.44 \pm 0.59$ (s.d.).

nursing load it was our intention that the method should give a comprised measure of all the three components. The statistically significant correlation between staff time consumption and nursing load score indicates an important contribution of the time consumption to the nursing staff grading of the concept nursing load. The other components in the concept nursing load, the physical and mental load on the staff are more difficult to estimate arithmetically. We are therefore not able to evaluate to what extent they have influenced the grading of the various factors in our method.

The significant correlation between nursing load and time consumption implies that the method may be used for time studies in hospital administration and planning. Here, the time involved for the staff might be considered the most essential component of nursing load. A simple method of calculating this is therefore of great value. The method described in this article affords such a method, since only a few minutes are required to record in the individual patient the limited number of services that are linearly correlated to the time consumption of the staff. The gain compared with the conventional time studies is obvious.

The equation in Fig. 1 shows that a patient with maximum nursing need requires on an average 7 times as long staff time a day as the patient without any of the recorded functional reductions. The average time consumption of the staff thus varies between 33 and 215 min per patient and day.

The percentage time taken for the light, medium-heavy, and heavy tasks for each patient was the same, irrespective of nursing load. This indi-

Table II. Time consumption of different categories of nursing staff at various nursing loads of the patients

	Nursing load groups			
	0-4 points n = 21	5-12 points n = 17	13-21 points n = 13	22-41 points n = 14
Nurses	6	7	7	7
Senior student nurses	1	3	8	17
Nurses' assistants	21	56	75	85
Mental and senior nurse students	3	3	6	18
Night staff (nurse + assistants)	5	12	18	25
Total	36	83	114	152

Table III. Percentage time consumption for light, medium-heavy, and heavy tasks in different nursing load groups

Nature of tasks	Nursing load score				Mean
	0-4	5-12	13-21	22-41	
Light	38	29	35	35	34
Medium heavy	14	21	14	15	16
Heavy	48	50	51	50	50
No. of patients	21	17	13	14	

cates that both light and heavy duties are more time-demanding with increasing nursing load.

We are aware of the fact that the grading in two or three respects has meant a systematic simplification. This is true especially for the patients confined to bed, who in our system were given a maximum nursing load score regarding, for instance, dressing, although dressing was not an actual factor for this group of patients. Exclusion of these score points, however, would mean that the patients confined to bed could be given less score points than the patients confined to wheelchair. In the unanimous opinion of the nursing staff, this is faulty. The explanation is probably that the patient confined to bed requires nursing and help with other matters that are not recorded in this investigation. Such factors are bedsores prophylaxis and bed making. Since these factors are common to all patients confined to bed it may be assumed that they are in part responsible for the high nursing load score in this group. We therefore considered it unwise to further evaluate these factors as far as score points are concerned.

Since the contribution of physical and mental load to the method to calculate nursing load is not known, the method can not without modifications be applied to a clientele where the physical or mental load on the staff may be different. Thus, it is probable that the load of the nursing responsibility is experienced in another and more prominent manner in extremely acute departments, after-care departments, and certain surgical departments than in the department where this study was made. Furthermore, the physical load is probably less pronounced in e.g. a psychiatric or ophthalmologic clientele. On the other hand, the nursing factors that are recorded in this investigation seem representative for the nursing problem of nursing home departments and many hospitals,

Table IV. Chart of registration for patients nursed at Vasa hospital

					Registration:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1-9		
					Birth year													
Name: _____	Birth date: _____ / _____		Sex	<input type="checkbox"/>														
Date of admission: _____												<input type="checkbox"/>	<input type="checkbox"/>	10-12				
Earlier treatment: _____												<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13-18
Earlier treatment at Vasa Hospital: _____												<input type="checkbox"/>	<input type="checkbox"/>	19-20				
													<input type="checkbox"/>	21				

Degree of consciousness	1 = somnolent	2 = unconscious				<input type="checkbox"/>	22	
Mental condition	1 = inactive	2 = obvious ment. deviation	3 = period. conf. or dementia	4 = confused			<input type="checkbox"/>	23
Disturbing Sight	1 = periodically reduced	2 = continuously locomotor vision	3 = blind	4 = not appraisable			<input type="checkbox"/>	24
Hearing	1 = deaf to conversation	2 = deaf	3 = not appraisable			<input type="checkbox"/>	25	
Pulmonary function	1 = reduced	2 = permanently reduced	3 = strongly reduced	4 = perm. strongly reduced			<input type="checkbox"/>	26
Cardiac function	1 = slight incompens	2 = moderate incompens	3 = severe incompens			<input type="checkbox"/>	27	
Angina pectoris complaints	1 = slight	2 = medium severe	3 = very severe	4 = not appraisable			<input type="checkbox"/>	28
Other pain conditions	1 = moderate	2 = severe	3 = require morphine			<input type="checkbox"/>	29	
Evacuation	1 = diarrh.	2 = periodical diarrhoea	3 = varying from diarrhoea to constipation	4 = require laxative	5 = require enema	<input type="checkbox"/>	30	
Incontinentia alvi	1 = always	2 = periodically	3 = anus praeter			<input type="checkbox"/>	31	
Urine incontin.	1 = always	2 = periodically	3 = uridom	4 = indwelling cathet.			<input type="checkbox"/>	32
Urinary tract inf.	1 = for 2 mths	2 = repeatedly			<input type="checkbox"/>	33		
Bedsore	1 = small	2 = large (mult)			<input type="checkbox"/>	34		
Right arm	1 = paresis	2 = paralysis	3 = rigidity	4 = tremor	5 = coord. disturbance	<input type="checkbox"/>	35	
Left arm	1 = paresis	2 = paralysis	3 = rigidity	4 = tremor	5 = coord. disturbance	<input type="checkbox"/>	36	
Right leg	1 = paresis	2 = paralysis	3 = rigidity	4 = tremor	5 = coord. disturbance	<input type="checkbox"/>	37	
Left leg	1 = paresis	2 = paralysis	3 = rigidity	4 = tremor	5 = coord. disturbance	<input type="checkbox"/>	38	
Right arm	1 = moderate contr.	2 = pronounced contr.	3 = deform.	4 = pronounced deform.	5 = amput.	<input type="checkbox"/>	39	
Left arm	1 = moderate contr.	2 = pronounced contr.	3 = deform.	4 = pronounced deform.	5 = amput.	<input type="checkbox"/>	40	
Right leg	1 = moderate contr.	2 = pronounced contr.	3 = deform.	4 = pronounced deform.	5 = amput.	<input type="checkbox"/>	41	
Left leg	1 = moderate contr.	2 = pronounced contr.	3 = deform.	4 = pronounced deform.	5 = amput.	<input type="checkbox"/>	42	
Able to dress	1 = some help	2 = much help	3 = not able			<input type="checkbox"/>	43	
Personal hygiene	1 = some help	2 = much help	3 = not able			<input type="checkbox"/>	44	
Toilet visits	1 = some help	2 = much help	3 = not able			<input type="checkbox"/>	45	
Walking	1 = some help	2 = much help	3 = wheel chair	4 = chair	5 = confined to bed	<input type="checkbox"/>	46	
Feeds himself	1 = some help	2 = much help	3 = not able			<input type="checkbox"/>	47	
Speech faculty	1 = reduced	2 = strongly reduced	3 = aphasia			<input type="checkbox"/>	48	
Present suitable form of care: at ...	1 = home	2 = home for the aged	3 = nursing home	4 = short term hospital	5 = VH ^a 6 = SH ^b	<input type="checkbox"/>	49	
Can be rehab. to	1 = home	2 = home for the aged	3 = nursing home	4 = short term hospital	5 = VH 6 = SH	<input type="checkbox"/>	50	

Diagnoses: I II 52-61III IV 62-71Treatment need caused by diagnosis: 72^a Vasa Hospital.^b Nursing home for senile dementia.

Table V. Instructions for filling in the chart in Table IV

If, with respect to the patient's age and conditions otherwise, there is a satisfactory function, set a cross at the left of each line.

Date of admission

The date the patient was admitted for the illness in question. If the patient has been discharged from Vasa Hospital for a short stay in his own home (4 weeks) or for investigation at another hospital (maximum 4 weeks) the original admission date is valid.

Previous treatment at Vasa

Number of treatments.

Degree of consciousness

Somnolent: Can be awakened by light stimuli, for instance, by being spoken to, pinched.

Mental conditions

Inactive: Unenterprising, listless, must be stimulated to most activities such as personal hygiene, staying out of bed, work therapy.

Obvious mental deviation: Intelligence defects of noticeable degree (debility and deeper). Lesional conditions, where noticeable tender heartedness, irritability, ixoidia exist. Depressive and euphoric conditions that demand special measures or otherwise complicate the nursing.

Periodically confused, light dementia: Nocturnal confusion, considerable deterioration of memory but not disorientation.

Confused: Not oriented to time, surroundings, or situation.

Disturbing

Periodically: Disturbs co-patients some time during the month by screaming, nagging, soiling, or in other ways.

Sight

Reduced: Unable to read newspapers.

Hearing

Unable to hear conversations: Despite hearing aid, cannot hear conversations, but answers when screamed at.

Pulmonary function

Reduced: Pulmonarily conditioned dyspnea or cyanosis when moving about.

Strongly reduced: Pulmonarily conditioned dyspnea or cyanosis when at rest.

Cardiac function

Slight incompensation: Oedema in the legs in the evenings, dyspnea when climbing stairs, incompensation symptoms that do not allow normal everyday activity.

Moderate incompensation: Incompensation symptoms sometimes at normal activity, but not to the extent that warrants the description severely incompensated.

Severe incompensation: Signs of incompensation, which despite treatment prevents normal activity. Patients who cannot climb stairs because of heart disease are included in this group.

Angina pectoris

Slight: Stenocardia only at extraordinary strain.

Medium-severe: Stenocardia only at moderate strain.

Severe: Stenocardia also at rest.

Other pain conditions

Moderate: Sometimes requires analgetics.

Severe: Requires analgetics daily, however not morphine.

Evacuation

Diarrhoea: Two or more times daily, several times a week.

Periodical diarrhoea: A few days every month.

Requires laxative: Regularly.

Requires enema: Several times a month.

Urinary tract infection

Only clinically manifest, which has required treatment during the past two months.

Repeated times: Frequent recurrences or chronic infection.

Bedsore

Small: Maximum two, sores less than three cm diameter.

Contracture

Moderate: Decrease of mobility, which is less than half the normal.

Deformity

Faulty position in joint, which decreases the mobility by $\frac{1}{3}$ or less; faulty position in skeleton, which decreases mobility to a corresponding extent.

Ability to dress himself

Some help: Needs help with certain articles of clothing, or needs repeated admonitions.

Personal hygiene

Some help: Needs help with certain elements in washing.

Able to visit toilet

Some help: Needs to be watched and admonished to visit toilet.

Unable: Uses bed-pan.

Walking

Some help: Walks with aid of stick, crutches or with quadrupel walking aids.

Much help: Walks with help from a companion or in a walking chair.

Wheel-chair: Can manipulate a wheel-chair.

Chair: Sits up in a chair during the day. Unable to use a wheel-chair.

Feeds himself

Some help: Needs help to cut up food, but can use knife and fork and can eat and drink without further aid.

Faculty of speech

Reduced: Can mostly make himself understood, but is inarticulate and indistinct. No aphasia.

e.g. clinics of internal medicine, neurology, rheumatic diseases. After possible completions, the method could therefore be applied also to other clientele.

II. PRACTICAL APPLICATION

The method described above to calculate nursing load was used at the registration on the in-patient

Table VI. *Birth years and admission years of the patients*

	Number	%
<i>Birth year</i>		
1860-69	5	0.7
1870-79	74	10.7
1880-89	299	43.3
1890-99	219	31.7
1900-09	68	9.8
1910-19	22	3.1
1920-29	3	0.4
	690	
<i>Year of admission</i>		
1947-49	4	0.6
1950-59	16	2.3
1960-62	28	4.0
1963-64	79	11.4
1965	103	14.9
1966	176	25.4
1967	284	41.2
	690	

clientele at Vasa Hospital. This hospital is intended for chronic cases and for a geriatric clientele. The aim of the investigation was to analyse the nursing load within various patient categories before planning the continued expansion of nursing forms for chronically ill patients in Gothenburg.

METHODS

The investigation was carried out during the period 15 April — 31 May 1967 in consultation with the ward doctors and nurses concerned. The registrations were performed by two of the authors over the whole clinic and was at each ward made in one day.

The chart used for registration contained:

1. Information concerning the patient's case history.
2. The symptoms and status of the patient.
3. The ADL-function summarized.
4. An appraisal of the suitable form of nursing and rehabilitation possibilities.
5. The diagnosis.

Table IV shows the chart; Table V gives instructions on how to fill it in.

The diagnoses were recorded according to W.H.O.'s classification and were thereafter arranged in 19 groups (see Table VIII). Some of these diagnosis groups must be further commented on. As metabolic diseases are counted: obesity, gout, and endocrine disturbances except diabetes. As joint and skeletal diseases are counted: arthrosis deformans, osteoporosis, and fractures excluding femoral neck. With arteriosclerosis cerebri, we refer to conditions with slight neurological symptoms of varying character where the patient's degree of mental alertness varied from

time to time: with cerebral insult, we refer to conditions with coarser focal neurological non-response symptoms, as a rule hemiparesis; with senile dementia, we refer to successively progressing mental blunting, without focal neurological symptoms. All diagnoses that were important for the need for nursing or which were considered able to influence the prognosis were recorded. However, a maximum of 4 diagnoses were included. Where several conditions justified hospital treatment, the most important was recorded first. In column 72 Table V, a special code number is given to indicate whether the need for treatment was caused solely by one, two, three, or by four diagnoses.

The material was also used for the calculation of nursing load in:

- (a) Patients who obviously needed the diagnostic or therapeutic resources of a hospital.
- (b) Those who needed more or less continuous nursing of a qualified medical staff but were less dependent on special diagnostic or therapeutic resources. Those patients were considered suitable for care in nursing homes for somatically ill or mentally diseased patients.
- (c) Those who could be at home if medical care and help for a few hours daily were available.

RESULTS

In all, 690 patients, 234 men and 456 women (34% and 66%, respectively) were investigated. The distribution of birth years is given in Table VI, where the approximate nursing time is also reported in the form of the year of admission of the patient. Table VII shows the various illness symptoms and reductions in the ADL-function that are important for the nursing load of the patients.

The diagnosis distribution is given in Table VIII. Arteriosclerosis cerebri, senile dementia, circulatory diseases, and cerebral vascular accident dominate as first diagnosis (a total of 54% of the patients).

Nursing load recording

The mean value in nursing load score for the entire patient material of the hospital was 13.9 (Table VIII). Table VIII also shows the average nursing load score in different diagnostic groups. Many of the patients included in this material were treated in the hospital for several conditions, and the diagnosis included in Table VIII represent the conditions considered the primary reason for hospital care.

In table IX, a corresponding analysis of nursing load of those patients who were labelled with only one diagnosis is made. However, only pa-

Table VII. Percentage distribution of symptoms and reductions in functions

Degree of consciousness	93.6	Somnolent	6.0	Unconscious	0.2	Period conf. or	14.7	Confused	28.2
Mental conditions	40.5	Inactive	11.2	Obvious ment. deviation	5.2	dementia			
Disturbing Sight	82.3	Periodically Reduced	10.4	Continuously Locomotor vision	7.2	Blind	1.5	Not appraisable	5.6
Hearing	85.7	Deaf to convsn.	11.0	Deaf	1.3	Not appraisable	1.8	Perm. str. reduced	0.1
Pulmonary function	95.3	Reduced	2.4	Perm. red.	1.0	Strongly red.	1.0		
Cardiac function	68.2	Slight incompens.	21.8	Moderate incompens.	6.3	Severe incomp.	3.4		
Angina pectoris complaints	92.1	Slight	4.6	Medium-sev.	2.1	Very severe	0.5	Not appraisable	0.4
Other pain conditions	68.4	Moderate	22.6	Severe	7.6	Requires mo.	1.3	Requires laxatives	60.2
Evacuation	30.2	Diarrhoea	1.0	Periodical diarrhoea	1.8	Varying from diarrhoea to constipation	1.3		5.2
Incontinencia alvi	61.8	Always	29.6	Periodically	8.0	Anus praeter	0.6		
Urine incontinence	50.1	Always	14.3	Periodically	8.5	Uridom	2.0	Indwelling catheter	24.9
Urinary tract infection	57.3	For 2 months	14.3	Repeatedly	28.1				
Bedsore	93.3	Small	4.3	Large (mult.)	2.3				
Able to dress	27.0	Some help	20.5	Much help	16.0	Not able	36.3		
Personal hygiene	28.2	Some help	16.8	Much help	23.4	Not able	31.5		
Toilet visits	30.8	Some help	11.3	Much help	12.4	Not able	45.3		
Walking	23.4	Some help	16.5	Much help	13.0	Wheel-chair	6.5	Chair	27.3
Feeds himself	71.8	Some help	9.7	Much help	5.3	Not able	13.0		
Speech ability	78.1	Slight	8.4	Severe	4.7	Aphasia	8.6		
									13.0
									Confined to bed

Table VIII. *Distribution of main diagnosis of the listed patients*

For each diagnosis, the table also illustrates the percentage distribution of the patients in different nursing load groups and the average nursing load score for each diagnosis group

Diagnosis	No. of patients	Nursing load groups				Average nursing load score \pm s.e.
		0-4	5-12	13-21	22-41	
Stomach, intestine, liver diseases	9	89	11	—	—	1.2 \pm 0.8
Diseases of the blood	5	60	40	—	—	2.9 \pm 1.5
Mental conditions (not senile dementia)	6	67	33	—	—	4.2 \pm 1.7
Metabolic conditions (not diabetes)	10	60	10	30	—	5.4 \pm 1.3
Investigation cases and uncertain cases	20	60	25	5	10	5.7 \pm 1.9
Joint and skeletal diseases	26	46	31	12	12	8.6 \pm 1.8
Pulmonary diseases	9	56	11	11	22	8.7 \pm 3.7
Circulatory diseases	88	50	16	19	15	8.9 \pm 1.0
Cancer	26	58	8	15	19	8.9 \pm 2.2
Urinary tract diseases	14	43	26	14	14	9.0 \pm 2.4
Rheumatoid arthritis	50	30	32	28	10	10.3 \pm 1.5
Diabetes mellitus	48	35	27	21	17	10.5 \pm 1.4
Femoral neck fracture	22	36	32	5	27	11.0 \pm 2.1
Social and senile weakness	18	22	22	22	33	14.8 \pm 2.5
Arteriosclerosis cerebri	113	22	18	21	39	15.8 \pm 1.2
Parkinson's disease	27	22	15	19	44	17.6 \pm 2.4
Cerebral vascular accident	79	14	19	17	51	19.7 \pm 1.2
Senile dementia	93	7	12	25	57	21.5 \pm 1.0
Other neurological disorders	27	—	15	33	52	22.5 \pm 1.6
Total	690	30	19	19	31	13.9 \pm 0.4

tient groups of more than six are reported in the table.

Table X gives the number of patients judged suitable for care at home, in homes for the aged, hospitals for chronic cases, nursing homes, or nursing homes for senile dementia. An average nursing load score was calculated for each of these groups.

The patients were distributed into 4 groups according to the following principles:

1. patients who needed only some supervision, but who could mainly manage themselves (nursing load score: 0-4 points, 207 patients)
2. patients who needed some supervision and help with personal hygiene, but who managed

Table X. *Number of patients judged suitable for treatment at home, in a home for the aged, in Vasa Hospital, in a nursing home, or in a nursing home for senile dementia; average nursing load score in these groups*

Homes for the aged in Sweden are intended for old people who have no illness requiring medical supervision. Nursing homes are homes in charge of matrons and supervised daily by a doctor if necessary. The nursing homes have no diagnostic resources. Homes for senile dementia patients are nursing homes where supervision can be exercised over senile dementia patients who have no other special illness conditions

Table IX. *Average nursing load score for different diagnoses of patients with only one diagnosis*

Only diagnosis groups with more than six patients are recorded

Diagnosis	No. of patients	Average nursing load score (points) \pm s.e.
Rheumatoid arthritis	15	5.3 \pm 1.5
Diabetes mellitus	6	6.7 \pm 4.2
Circulatory diseases	11	10.7 \pm 3.6
Cerebral vascular accident	22	14.3 \pm 2.4
Arteriosclerosis cerebri	20	15.2 \pm 2.7
Senile dementia	17	18.4 \pm 2.7

	No. of patients	Average nursing load score (points) \pm s.e.
At home	27	1.9 \pm 0.1
Home for the aged	63	2.4 \pm 0.1
Geriatric hospital	248	11.3 \pm 0.6
Nursing home	262	17.8 \pm 0.6
Home for senile dementia	89	21.9 \pm 1.0

to move a short distance without help (nursing load score: 5-12 points, 134 patients)

3. patients who needed help with personal hygiene, feeding, and to move even short distances (nursing load score: 13-21 points, 134 patients)
4. patients who were completely dependent on the help of the staff, as well as disoriented, disturbing, and incontinent patients (nursing load score: 22-41 points, 215 patients).

In table VIII, where the patients are grouped according to first diagnoses, the percentage distribution in the 4 nursing load groups is reported for each first-diagnosis.

DISCUSSION

As mentioned, the registration was made during the course of 1¹/₂ months. Nevertheless, the results represent a cross section of the nursing situation at the hospital, because the registration at each department was made during one day and thus represents an actual number of occupied beds in the ward. We tried to ensure a uniform appraisal by letting the same two investigators take part at the registration of each ward.

In this study, patients considered suitable for care in nursing homes proved to have a very high nursing load score, even significantly higher than those who were considered to need the resources of the clinic for chronic cases. Although the need of physicians and nurses is less in nursing homes than in hospitals the above mentioned observation clearly demonstrates that the nursing staff of the nursing homes must be at least as

great as that of the hospitals. A saving of staff time can only be achieved by furnishing the nursing homes with technical resources adapted precisely to this clientele. The technical aid for treating these nursing problems must be even more qualified than at the hospital clinics.

The lack of beds in nursing homes with adequate personal and technical resources in Gothenburg is also illustrated by the fact that 38% of the Vasa clientele are patients who preferably ought to be cared for in nursing homes.

The need to measure nursing load exists also for many other reasons: for exemple, to measure results of various medical therapeutic investments. In a clinic for chronic cases, rehabilitation activities must in many instances have another objective than in the clinic for acute cases, where the main purpose is to re-adapt the patient to working life. Medical rehabilitation in a clinic for chronic cases has as its main purpose to restore to the patient his ability to manage, wholly or partly, his personal daily life. It is essential that changes in the load that the patient puts on the nursing staff can be recorded.

The method developed to calculate nursing load has also been used in a study of the effect of an intensified rehabilitation activity in a geriatric clientele. This will be reported later in this journal.

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