を行うことができる．またケア担当者会議では，他職種への医療上のアドバイスを行うことが期待されている．しかし，現実は，日常業務が忙しいこともあり，ケア担当者会議はほとんど開催されていない．現実的な方法としては，かかりつけ医はFAXでサービス計画をみておくべきであろう．ケア担当者会議にかわるもの，あるいはシステムを検討する必要がある．

2　主治医意見書と特定疾病

主治医意見書が介護認定審査会で重要な意味をもち，ひいては患者の利益につながり，また一方，患者確保の観点からも重要な意味をもつことは明らかである．しかし，痴呆症の診断は神経症状の見方などにおいて十分でない場合もあることが指摘されている．特定疾病の診断においても，同様である．主治医意見書の内容の見直しも検討されるべきであろう．要介護度の認定に必要な情報がもう少し洗練されしかも十分なものとなる必要がある．

今後，アルツハイマー病が治療の対象となる時代がきて，かかりつけ医は重要な役割をになうこととなった．つまり，介護保険制度により痴呆症の診断や治療が重要視されるようになったのである．主治医意見書を書くにあたり，介護保険に関する基本的知識，痴呆症の診断，失行や失認などの神経症状の見方など要介護者に対するあらゆる面についての認識が求められるようになった．さらに，第2号被保険者のうち特定疾病（表1）の基準を満たす者は要介護者となり，介護保険のサービスを利用できるという画期的事実がある．ただし，今後，特定疾病は拡大する方向で検討されるべきであろう．この主治医意見書は二次判定において重要な参考資料となっており，事例によっては要介護度の変更の根拠となる．要介護者は要介護度が高いほどより多くのサービスを利用できる権利を得ることから，高く変更されることは利用者にとってメリットがある．逆に，これまで利用していたサービスが十分に使えなくなることや，

表1　介護保険法における15の特定疾病

1．筋萎縮性側索硬化症
2．後縦靱帯骨化症
3．骨折を伴う骨粗鬆症
4．シャイードレーガー症候群
5．初老期における痴呆
6．脊髄小脳変性症
7．脊柱管狭窄症
8．早老症
9．糖尿病性神経障害，糖尿病性腎症，糖尿病（性）網膜症
10．脳血管障害
11．パーキンソン病
12．閉塞性動脈硬化症
13．慢性関節リウマチ
14．慢性閉塞性肺疾患
15．両側の膝関節または股関節に著しい変形を伴う変形性関節症

要支援と認定され施設への入所ができなくなる場合もある．その意味でも，一次判定の結果と同様に主治医意見書の果たす役割も大きい．また一部の医師は，介護認定審査会や介護保険審査会へ委員としての参加を期待されている．医療のスタッフも否応なく，これら介護保険の運用のなかで参加を義務づけられている．

3　病院の変革

先進的な病院では介護保険に備え，介護老人保健施設や療養型病床群の附設，訪問看護ステーションなどの開設などを行ってきた．これらは国の方針に沿ったものであり，結果的には入院期間の短縮と歩調を合わせた要介護高齢者対策でもあった．これらの病院は結果として「複合体」を形成し，介護保険時代にあって生き残りが可能な施設として活躍が予想されている．ただし，介護保険は在宅療養を支援するものであったが，実際には施設入所待ちが増え，在宅療養はより困難となっている傾向がみられる．この点については在宅療養の課題を整理し，在宅療養を支援する方向でシステムを検討する必要がある．

一方，病院の多くが経営困難な状況にあり，診療報酬からも在院日数の短縮や在宅療養の推進が

求められている．また，在宅療養推進室の開設やオープンベッドの運営も推進されている．すなわち，病院の多くは今後かかりつけ医との連携を深める方向を目指している．言い換えれば，かかりつけ医からの「紹介状」を必要としており，かかりつけ医側の対応も必要であろう．またこのほか，病院自体はクリニカルパスの導入や職員の外注化などを行っている．さらに多くの病院がベッドを療養型病床に変更したり，老人保健施設を併設して「複合体」を目指している．これは，介護保険制度に対応して，病院の効率的な経営や患者確保を行わなければならないからである．

介護保険関連の種々の書類は病院の医師にとって負担となっているが，実は患者サービスであると同時に，患者確保という観点からも重要な意味をもっている．さらには福祉サービスと医療サービスを一体的に提供することによって，在宅療養の支援を行うことができることから，患者にとっては安心して医療と福祉の提供を受けることができるという意味をもつ．ひいてはこのことは，病院の命題である在院日数の短縮につながる．在宅療養の重視は病院にとっても無視できない流れである．それぞれの病院の地域における役割を考え，とくに高齢患者の対応において，システム化を考える必要がある．

4 かかりつけ医の役割

以上の医療，福祉の変革のなかで，かかりつけ医（主治医）には高齢者医療のシステムで中心的な役割をになうことが求められていることは明らかである．これに個々の医師がどのように対応していくのかが重要である．第一に，紹介状の記載である．病院は在院日数を短縮する必要があり，主治医からの紹介状がますます重要となる．さらに，主治医意見書の重要性はいうまでもない．また医師は介護保険サービスにかかわる訪問看護婦，理学療法士，作業療法士，ホームヘルパーなどに対して情報を提供し，適切な指示やアドバイスを行うことが必要である．今後はますます訪問看護ステーションを中心に在宅医療が強化され，そこではチーム医療が求められる．そのなかで医師は中心的な役割を果たし，医療の専門家としてアドバイスを行う必要があり，急変時などにも病院との連携を視野にいれて対応する必要がある．

この点においては，かかりつけ医は在宅医療の推進につながるものであり，今後医療の中心的な存在となるであろう．可能なかぎり在宅医療を行い，短期的で集中的な医療を必要とする場合には病院を利用する．つまり，医療は大きく急性期医療と慢性期医療と在宅医療に分けられるといっても過言ではない．このうち慢性期医療は介護保険で支え，在宅医療は医療と介護保険の両方で当面支えることになっている．2～3週間の急性期医療に引き続いて入院加療が必要な場合には，療養型病床群を利用する．現在の在宅医療は，往診，訪問診療に加え，介護保険制度では療養管理指導により，介護保険により点数を請求することができる．しかし，これは患者負担もあり，介護支援専門員との連携がないとなかなか保険請求できない現状である．

5 介護施設における医療

介護施設に特定疾病の患者が入所する場合もあり，介護施設における医療の重要性はなおいっそう増すことになる．また介護老人保健施設（老人保健施設）や介護療養型医療施設（療養型病床群）も，これまでの診療報酬の対象から介護報酬へシフトした．つまり，これらの施設は今後介護施設となり，介護の比重を増しながら，要介護者の長期ケアを行うこととなる．長期ケアにおいて最も重要なことは，リハビリテーションである．介護保険の理念は在宅療養の推進にあったが，介護保険導入後，必ずしも在宅療養は進んでいるとはいえないようである．この点では，いずれにしてもある時期に在宅療養を推進する施策をとる必要がある[1]．

6　介護報酬の見直し

介護報酬は時代とともにその意義はかわるであろうし，短期入所の利用にしても改正すべき点は多々ある．現在，サービス利用は支給限度額の40%程度にとどまっており，介護保険制度は要介護高齢者が急増しないかぎり黒字基調であろう．そのぶん，いまのうちに介護予防や予防医療の対策を講じる必要がある．市町村のサービスとしての上乗せ，横だしはいまだ十分とはいえない．

まとめ

以上，介護保険が導入され，医療も福祉も大きくかわりつつあるなかで医師はどのように考え，なにをすればよいのかをまとめてみた．今後の高齢者医療，長期ケアの発展に期待し，超高齢社会に医師としてどのように対応すればよいのかをさらに考えていきたい．

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The Relationship Between Functional Disability and Depressive Mood in Japanese Older Adult Inpatients

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ABSTRACT

Depression is commonly found in older adult patients and is often associated with handicaps. The authors administered the Comprehensive Geriatric Assessment (CGA), including basic activities of daily living (BADL), instrumental activities of daily living (IADL), Mini-Mental State Examination (MMSE), Geriatric Depression Scale (GDS)-15, and a socioenvironmental questionnaire to 198 patients who were admitted to Nagoya University Hospital, to examine the relationship between depressive mood and various physical and socioenvironmental outcomes. The overall GDS-15 score was correlated with the BADL and IADL. The factor analysis extracted 4 factors from the GDS-15 subscales. The factors labeled "loss of morale and hope" and "memory loss and reduction of social activity" were highly correlated with both ADLs, social variables, and the MMSE score. The results reveal that factor analysis of GDS-15 will help in understanding the etiology of depressive mood, thereby contributing to better therapeutic approaches. (*J Geriatr Psychiatry Neurol* 2004; 17:93-98)

Keywords: depressive mood; Geriatric Depression Scale; Comprehensive Geriatric Assessment; factor analysis

Depression is one of the most insidious problems faced by older adults, and its incidence is increasing with the growth of an aging population. Koenig and Blazer reported that the prevalence of major depression was about 1% among community-dwelling older adults and that less severe depressive disorder was present in over 25%.[1] Moreover, they reported that the rate of major depressive disorder in older adult hospitalized patients with illness was more than 10 times greater than that of the unhospitalized aging population. Depression is not only psychologically traumatic but also quite costly[2] because it is related to psychosomatic symptoms resulting in a higher frequency of examination and prescription of drugs. Furthermore, depression also decreases the morale of older people and increases the risk of being housebound. Although it is very important to adequately diagnose and treat depression in its early stage, it often remains unrecognized or untreated.[3] One of the main reasons for this is that depressive symptoms often resemble those of the aging process itself, such as progressive cognitive deterioration or physical disabilities.[4]

The Geriatric Depression Scale (GDS) is a self-administered questionnaire with 30 items[5] and is recommended by the Royal College of Physicians and British Geriatrics Society as a valid screening method for depression in older adults.[6] A short form of the GDS (GDS-15) was developed later[7] and was translated into Japanese.[8] The validity and reliability of the GDS-15 have been confirmed in both community and hospital settings.[9-11] Several studies have subjected the GDS-15 data to a factor analysis, which is a statistical technique to analyze interrelationships within a set of variables, resulting in the construction of a few hypothetical variables. To our knowledge, however, there has been only 1 study involving factor analysis of the Japanese version of the GDS-15, reported by Schreiner et al in poststroke patients.[12] In addition, there have been few studies demonstrating the relationship between GDS-15 factor loading and disabilities in the older population.

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The GDS-15 is included as one of the components in the Comprehensive Geriatric Assessment (CGA), a tool developed in the late 1980s[13,14] to assess not only medical conditions but also overall functional status with respect to physical, psychological, and social problems of the older adults.

Although it is well known that depressive mood is often associated with functional disabilities, the mechanism by which the disabilities cause depressive mood in the older adults remains unclear. We hypothesized that some variables associated with functional disability may be associated with depressive mood. Therefore, we investigated the relationship between depressive mood and physical health and socioenvironmental variables in older adult inpatients. In addition, we attempted to clarify the structure of depression by performing a factor analysis of the GDS-15.

METHODS

Subjects

Among 355 consecutive patients aged 65 and older (mean age ± SD: 77.3 ± 6.8) who were admitted to Nagoya University Hospital between July 1998 and August 2001, patients who were admitted to nongeriatric wards were not included due to the absence of experienced CGA assessment team in the wards. Also, patients with communication impairments due to problems such as severe dementia or consciousness disturbance and patients under intensive care were not included in the study. If a patient was admitted more than once during the study period, only the data from the first admission was used for this analysis. As a result, 198 older adult patients in total were included in the study.

Measurements

The CGA was administered within a week after admission. The CGA included height; weight; Body Mass Index (BMI); blood pressure; basic activities of daily living (BADL), which were measured with the Barthel Index[15]; instrumental activities of daily living (IADL) using Lawton's scale[16]; Mini-Mental State Examination (MMSE)[17]; GDS-15; hearing ability and vision; communicative competence; and living environment including socioeconomic status. We scored IADL by 5 items (IADL-5), excluding food preparation, housekeeping, and laundry items from the Lawton's scale because the study samples included male patients, who did not normally perform these activities. The low scores of BADL and IADL-5 indicate greater functional disability. The GDS-15 is scored so that higher scores indicate a greater degree of depressive mood. The recent research clarified that the sensitivity of the GDS-15 was 97.3% and the specificity was 95.9% for screening major and minor depression when the cut-off score was set at 6/6+ in the Japanese geriatric population.[18] Socioenvironmental status was assessed by Ozawa's scale,[19] which includes items on economic, marital, family status, and the relationship between the patient and his or her family. The GDS-15 was self-administered by the patient. The attending nurse collected all other information by interview and/or assessment.

Statistical Analysis

Correlation coefficients were calculated by Pearson's method for parametric data and Spearman's for nonparametric data. We used the chi-square test with Yates correction and Fisher's exact test for categorical comparisons of the data. Differences in the means of continuous measurements between genders were tested using the Student's t test. In addition, after nonparametric data in the CGA were categorized into 2 groups (subjects with and those without a problem with respect to each parameter measured), the means of the continuous measurements between the groups were also compared by Student's t test. The internal consistency of the GDS-15 was calculated with Cronbach's alpha. Principal component analysis for the GDS-15 was performed with an eigenvalue of 1.0 or more as the extraction criterion, and factors were identified after Varimax rotation. The factor score, which shows the power of a factor's contribution, was calculated by regression method, which cumulated factor loadings of all items of GDS-15. In the present study, a higher score indicates a greater contribution of the factor to depressive mood. Differences in continuous variables among the disease groups were determined by 1-way analysis of variance (ANOVA). Tukey's test was used for multiple comparisons when homoskedasticity was assumed by Levene's method, and Dunnet's test was performed when homoskedasticity was not assumed. Multiple regression analysis, using the equation-building method with the variables of significant measures detected in the univariate analysis, was conducted to identify the variables contributing to GDS-15 scores. Values of $P < .05$ were considered to indicate statistical significance; all tests were 2-tailed. All statistical analyses were performed on a personal computer with the statistical package SPSS for Windows (Version 11.0 SPSS, Chicago).

RESULTS

Table 1 reports CGA variables for all patients, according to their diagnostic category. The mean GDS-15 score of all patients was 5.9 ± 3.8 SD, and 39.3% of the patients had scores above 6. The homoskedasticities were assumed in age, systolic blood pressure, BADL, IADL-5, and GDS-15, but not in BMI or MMSE. Significant intergroup differences were observed on the BADL and IADL-5, but not in BMI, MMSE, or GDS-15. The BADL score in patients with diabetes mellitus was higher than that in patients with collagen disease ($P = .005$), and the IADL-5 score in patients with diabetes mellitus was higher than that in patients

Table 1. Mean Values ± Standard Deviation of Comprehensive Geriatric Assessment (CGA) Variables by Admitting Diagnosis

Admitting Diagnosis	*n (%)*	*Age*	*BMI (kg/m²)*	*sBP (mm Hg)*	*BADL*	*IADL-5*	*MMSE*	*GDS-15*	*GDS > 6*
Neurological disease	40 (20%)	76.5 ± 6.6	20.9 ± 3.9	128.5 ± 23.7	16.9 ± 4.1	4.0 ± 1.3	24.9 ± 4.5	6.3 ± 37	42%
Cardiovascular disease	36 (18%)	77.7 ± 8.4	23.5 ± 3.8	132.8 ± 20.0	18.0 ± 3.7	4.0 ± 1.3	26.0 ± 4.3	5.7 ± 4.0	38%
Diabetes mellitus	34 (17%)	74.2 ± 5.3	23.5 ± 3.1	138.3 ± 19.4	19.0 ± 3.0*	4.5 ± 0.9*	26.6 ± 3.5	4.6 ± 3.5	27%
Psychological disease	20 (10%)	78.5 ± 6.5	20.0 ± 3.4	138.5 ± 22.3	17.9 ± 3.0*	3.1 ± 1.9*	22.4 ± 4.9	7.6 ± 3.8	15%
Gastroenterological disease	14 (7%)	78.9 ± 6.8	21.1 ± 4.8	132.3 ± 14.1	18.2 ± 3.2*	4.2 ± 0.9	25.9 ± 3.8	5.9 ± 4.7	64%
Collagen disease	12 (6%)	77.7 ± 5.1	21.6 ± 4.0	133.5 ± 20.6	14.2 ± 6.5*	3.3 ± 1.7	23.7 ± 4.7	5.4 ± 2.7	17%
Infectional disease	11 (6%)	83.1 ± 4.7	19.9 ± 3.0	122.0 ± 15.7	19.5 ± 0.8	4.8 ± 0.4	27.3 ± 2.8	2.8 ± 1.8	0%
Others	31 (16%)	78.0 ± 7.6	20.7 ± 3.5	142.4 ± 29.0	18.0 ± 3.9	4.3 ± 1.1	26.1 ± 4.1	6.3 ± 4.0	43%
Total	198 (100%)	77.3 ± 6.8	21.9 ± 3.8	133.9 ± 21.7	17.8 ± 3.8	4.1 ± 1.3	25.5 ± 4.3	5.9 ± 3.8	39%

Note: BMI = body mass index, sBP = systolic blood pressure, BADL = basic activities of daily living, IADL = instrumental activities of daily living, MMSE = Mini-Mental State Examination, GDS = Geriatric Depression Scale.

*$P < .05$.

Table 2. Principal Components (Varimax) Factor Analysis of the Geriatric Depression Scale-15

Items	*Factor 1 Unhappiness*	*Factor 2 Apathy and Anxiety*	*Factor 3 Loss of Hope and Morale*	*Factor 4 Memory Loss and Reduction of Social Activity*
1. Satisfied	***0.708***	0.270	0.061	−0.266
2. Dropped activities	0.058	***0.646***	0.350	−0.020
3. Emptiness	0.299	***0.621***	−0.134	0.179
4. Often bored	0.151	***0.675***	0.140	0.233
5. In good spirits	***0.627***	0.216	0.129	0.216
6. Afraid something bad will happen	0.336	***0.572***	0.163	−0.100
7. Feels happy	***0.769***	0.027	0.128	0.101
8. Often feels helpless	−0.186	***0.536***	0.493	0.013
9. Prefers to stay in	0.009	0.095	0.385	***0.445***
10. More problems with memory than most	0.082	0.074	0.043	***0.805***
11. Wonderful to be alive	***0.553***	0.077	0.458	0.033
12. Feels worthless	0.348	0.108	***0.605***	0.242
13. Full of energy	0.061	0.063	***0.753***	0.002
14. Feels situation is hopeless	0.270	0.235	***0.679***	0.090
15. Most people better off than self	***0.487***	0.396	0.013	0.368
Explained variance	2.4	2.2	2.2	1.2
Cumulative percentage of variance explained	16.6	31.5	46.3	54.8

Note: The factor score was calculated by regression method, which cumulated factor loadings of all items of GDS-15. Loadings in italic bold indicate those selected to define the factor.

with psychological disease ($P = .009$). The patients with psychological disease showed the highest mean score of GDS-15, (7.6 ± 3.8 SD). No significant intersex difference was observed in all parameters examined. Antidepressants had been administered to 7.2% of all patients, and to 9.0% of the patients with a GDS-15 score greater than 6.

The internal consistency of GDS-15 was found to be satisfactory, Cronbach's alpha being .83. Factor analysis of GDS-15 extracted 4 factors, whose loading values are shown in Table 2. The cumulative percentage of variance explained was 57.3%. Factor 1 represented "unhappiness," which included the items satisfied, in good spirits, feels happy, wonderful to be alive, and most people better off than self. Factor 2, "apathy and anxiety," was made up of the items, dropped activities, emptiness, often bored, afraid something bad will happen, and often feels helpless. Factor 3, "loss of hope and morale," included the items feels worthless, full of energy, and feels situation is hopeless. Finally, factor 4, "memory loss and reduction of social activity," included the items prefers to stay in and more problems with memory than most.

Table 3. Correlation Between Geriatric Depression Scale-15, Extracted Factors, and Parametric Data

Measure	*GDS-15*	*Factor 1 Unhappiness*	*Factor 2 Apathy and Anxiety*	*Factor 3 Loss of Hope and Morale*	*Factor 4 Memory Loss and Reduction of Social Activity*
Age	0.123	−0.001	−0.108	0.250**	0.166*
BMI	−0.141	0.006	−0.135	−0.121	−0.036
sBP	−0.038	−0.260	−0.040	−0.009	−0.101
BADL	−0.168*	−0.033	−0.044	−0.191*	−0.055
IADL-5	−0.201**	−0.076	0.023	−0.235**	−0.066
MMSE	−0.151*	−0.034	0.050	−0.167*	−0.214**

Note: Pearson's rho used for correlations. BMI = body mass index, sBP = systolic blood pressure, BADL = basic activities of daily living, IADL = instrumental activities of daily living, MMSE = Mini-Mental State Examination.

*$P < .05$. **$P < .01$.

Pearson's coefficients of continuous variables are shown in Table 3. The total GDS-15 score had a significant negative correlation with IADL-5 ($r = -.201$, $P = .005$), BADL ($r = -.168$, $P = .021$), and MMSE ($r = -.151$, $P = .034$). However, there was no significant relationship between the GDS-15 score and age, BMI, or systolic blood pressure.

The score of factor 3 (loss of hope and morale) correlated positively with age and negatively with IADL-5, BADL, and MMSE scores, whereas factor 4 (memory loss and reduction of social activity) showed a significant positive correlation with age and a significant negative correlation with MMSE score. However, there was no significant relationship between the scores of factor 1

Table 4. Relationship of Nonparametric Data in Comprehensive Geriatric Assessment With the Geriatric Depression Scale-15 and Extracted Factors

Measurement	*Percent With Problem*	*Spearman's ρ With GDS-15*	*t Test for Mean Score GDS-15*	*Factor 1 Unhappiness*	*Factor 2 Apathy and Anxiety*	*Factor 3 Loss of Hope and Morale*	*Factor 4 Memory Loss and Reduction of Social Activity*
Gender (male/female)	–	–	NS	NS	NS	–0.22/0.17**	NS
BADL (with/without problem)							
Grooming	7.1%	–	NS	NS	NS	0.75/–0.08**	NS
Feeding	8.1%	–0.087	NS	NS	NS	NS	NS
Bowel continence	12.2%	–0.062	NS	NS	NS	NS	NS
Using toilet	14.2%	–0.122	NS	NS	NS	NS	NS
Ambulation	16.8%	–0.102	NS	NS	NS	0.31/–0.09*	NS
Chair/bed transfer	16.8%	–0.142	7.1/5.6*	NS	NS	NS	NS
Dressing	17.8%	–0.122	NS	NS	NS	NS	NS
Bladder control	19.8%	–0.097	NS	NS	NS	NS	NS
Bathing	25.0%	–	6.9/5.5*	NS	NS	0.27/–0.12*	NS
Using staircase	29.9%	–0.271*	7.4/5.2**	NS	NS	0.33/–0.17**	NS
IADL(with/without problem)							
Going outside	10.4%	–	NS	NS	–0.41/0.10*	NS	NS
Using telephone	11.4%	–	NS	NS	NS	NS	NS
Managing money	20.3%	–	NS	NS	NS	NS	NS
Medication	37.1%	–	NS	NS	–0.14/0.15*	NS	NS
Shopping	39.4%	–	NS	NS	NS	0.21/–0.15*	NS
Physical (with/without problem)							
Seeing	23.1%	–0.141	NS	NS	NS	NS	NS
Hearing	23.0%	–0.091	NS	NS	NS	NS	NS
Communication	7.0%	–0.152*	8.2/5.7*	NS	NS	NS	0.51/–0.48*
Social							
Economic status (dependent/ independent)	–	–0.163*	NS	NS	NS	NS	NS
Marital status (with/without spouse)	–	–0.148*	NS	NS	NS	0.20/–0.21**	NS
Familial status (alone/not alone)	–	–0.136	7.2/5.6*	0.50/–0.08*	NS	NS	NS
Family relation (with/without interaction)	–	–0.220*	NS	NS	NS	0.71/–0.03*	NS

Note: NS = not significant. t-test for mean score compared between 2 groups with or without problem for each item.

*$P < .05$. **$P < .01$. Dashes indicate not calculated because the items have less than 3 alternatives

(unhappiness) or factor 2 (apathy and anxiety) and other CGA variables.

The patients were divided into 2 groups depending on their score for CGA variables. Then we compared the difference between the GDS-15 factor scores and these 2 groups using Student's *t* test. The correlations of nonparametric data with the score of GDS-15 and the extracted factors are shown in Table 4. The GDS-15 score had a significant negative correlation with BADL (using staircase), communicative ability, economic and marital status, and family relationship. Patients having problems in using the staircase, bathing, chair/bed transfer, and communication showed a significantly higher GDS-15 score than the patients without these problems ($P < .001$, $P = .041$, $P = .034$, $P = .028$, respectively). Also, patients living alone showed a significantly higher GDS-15 score than those not living alone ($P = .043$). The statistical analysis revealed that the score of factor 3 (loss of hope and morale) was significantly higher among women ($P = .007$). Factor 3 had a much stronger relationship with some variables of BADL and IADL-5, such as grooming, using staircase, ambulation, bathing, and shopping, than it did with other factors. On the other hand, factor 2 (apathy and anxiety) was inversely correlated with going outside and managing medication.

Multiple regression analysis was performed to predict the score of GDS-15 with significant variables, which were using stairs, bathing, communicative ability, economic status, marital status, familial status, and the total score of MMSE. This analysis elicited a model with an adjusted R^2 of .144 ($P < .001$) (Table 5).

DISCUSSION

The mean GDS-15 score in this study was 5.9, which was higher than those in previous studies. In a recent study of 1343 Japanese community-dwelling older adults, the mean GDS-15 score was 2.0 and 23.7% scored 6 or higher.[20] Meanwhile, Patrick et al reported that the mean score of hospitalized patients in their geriatric rehabilitation unit was 3.8 ± 2.8 SD.[21] The higher GDS-15 scores obtained in this study may imply that worsening medical conditions resulting in admission to the hospital relate to increased depressive symptoms. In particular, the neurological disease group showed the highest mean GDS-15 score, which is in line with findings in previous studies that depression

Table 5. Coefficients of Regression Model for Geriatric Depression Scale-15

Variable	ß	Standardized ß	T	P Value
Using stairs	−2.48	−0.48	−4.27	< .001
Bathing	2.59	0.29	2.44	< .001
Communicative ability	−0.57	−0.04	−0.558	.016
Economic status	−0.48	−0.07	−0.917	.577
Marital status	−0.34	−0.09	−1.25	.360
Familial status	−1.02	−0.17	−2.17	.211
MMSE	−0.04	−0.04	−0.55	.584

Note: MMSE = Mini-Mental State Examination. GDS-15 = −2.48 × (Using stairs) + 2.59 × (Bathing) − 0.57 × (Communication) − 0.48 × (Economic status) − 0.34 × (Marital status) − 1.02 × (Family status) − 0.04 × MMSE. Total adjusted R^2 = 0.144, P < .001.

frequently occurs after stroke.[10,22,23] In the present study, antidepressants were administered to only 9.0% of the patients who had a GDS-15 score of greater than 6, which supports claims that depression is overlooked by clinicians, or is not treated adequately.[4]

The results of this study are consistent with previous findings that physical disabilities relate to depressive symptoms.[24-27] In the present study, the GDS-15 score was negatively correlated with the BADL and IADL. Three BADL items in particular, using staircase, chair/bed transfer, and bathing, had strong negative correlations with the GDS-15 score. These results indicate that loss of lower body strength and impaired mobility may affect patient's mood. A possible explanation for the difference is that depressive mood may be associated with impaired abilities to maintain normality in life such as immobility, rather than the severity of disabilities.

We also found a weak but significantly negative correlation between the GDS-15 and MMSE scores. The findings of previous studies regarding the relationship between depression and the severity of dementia are varying, which may be attributable to differences in study design.[28] Although many investigators have reported a decrease in the frequency of depression in advanced dementia,[29,30] no such association was found in this study probably because the cognitive impairment of the patients in this study was rather mild with mean MMSE score of 25.5 ± 4.3 SD, and no patients with advanced dementia were included.

Liu et al reported that being female, older, and without spouse were related to depressive symptoms among Chinese older adults.[31] Our results did not demonstrate a significant relationship between the GDS-15 score and either gender or age, but a higher GDS-15 score was significantly related with economic dependence, absence of spouse, and poor family relationship particularly with "living alone."

Thus far, many researchers have reported on the factor analysis of GDS-15, but the relationship between the factors extracted and the physical, psychological, and socioenvironmental status of the older adults has not been extensively investigated. We found that factor 3, "loss of morale and hope," was highly related with BADL and IADL. Meanwhile, factor 4, "memory loss and reduction of social activity," was related with age and MMSE, although factor 1 (unhappiness) and factor 2 (apathy and anxiety) were not correlated with any of those parameters examined, which means they may be normal aspects of disabled state and hospitalization. Some investigators have reported that sense of loss or environmental change can induce depression in the aged.[32,33]

GDS-15 is often included in CGA, which is a useful tool to comprehensively assess older adult patients. The meta-analysis conducted by Stuck et al demonstrated that CGA was effective in improving mortality and in reducing hospitalization.[34] However, there have been few studies using CGA results to identify specific clinical strategies for patient care. The present study demonstrates that factor analysis of GDS-15 helps health care staffs establish better therapeutic strategies for depressive mood of older patients. For example, the present findings suggest that intervention to assist in coping with the functional impairment may decrease depressive symptoms in subjects suffering from them. However, pharmacological interventions may be more appropriate for nondisabled patients.

In conclusion, we carried out a structural analysis of the GDS-15 in older adult inpatients and extracted 4 factors related with functional disabilities. Factor 3, "loss of morale and hope," and factor 4, "memory loss and reduction of social activity," were highly related with ADL, social variables, and cognitive impairment. In addition, the results suggest that factor analysis will allow improved assessment and medical support of older adult inpatients. Thus, we believe that the results have indicated an extended utility of the GDS-15 not only as a simple screening method for depressive mood but also as a tool for better therapeutic approaches.

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Effect of long-term care insurance on communication/recording tasks for in-home nursing care services

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Abstract

The purpose of this research was to clarify the possible changes brought about by the introduction of the long-term care insurance system in terms of number of communication/recording tasks, related nursing services in use, and when and where these tasks were performed. By examining the detailed content of communication/recording tasks, this study also sought to explore the advantages of introducing information technology (IT) systems in nursing service settings. The study was designed before-and-after study in two sessions, February 2000 and August 2000, namely before and after the introduction of Japan's long-term care insurance system. Participants were clients using the institution's in-home nursing services and all staff in a medical institution located in the Mikawa region of Aichi Prefecture, Japan. Following measurements were performed: (1) nursing service in use, (2) type of job, (3) date and time, (4) from whom, (5) to whom, (6) communication tool and (7) content, related to a particular communication. Communication/recording tasks were frequently performed around the starting and closing time of services. Following the adoption of the new system, these tasks tended to occur mostly around the starting time of services. As for the staff, the involvement of the professional carers increased. Regarding content of communication/recording, reports, confirmation and instruction increased. In conclusion, the use of IT driven devices is recommended

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to streamline the performance of communication/recording tasks as well as to ease the rush of these tasks thereby improving the quality of nursing services.

Keywords: Long-term care insurance; Communication/recording task; Nursing service setting; In-home nursing care service; Information technology (IT)

1. Introduction

The aging of society is a phenomenon affecting many developed countries today (Itouji, 1996; Adachi, 1998; Hattori et al., 2000; David et al., 2001; Esping-Andersen, 2001; Robert, 2002), and the need to establish nursing care systems that adequately meet the increasing related demands is thus evermore pressing (Adachi, 1998; Hilary, 2001).

In April 2000, Japan introduced a social insurance system for elderly care based on the principle of Socialization of Elderly Care (Masuda et al., 2001; Matsuda, 2002), whereby the burden of the care for the elderly is shared by society as well as the family (Hattori et al., 2000; Hilary, 2001). Prior to the introduction of the system, some had predicted a shortage in nursing service provision (Ueda et al., 1994; Hashimoto, 1996; Itouji, 1996). A quantitative increase in nursing service demand was reported after the adoption of the system (Miyatake, 2001), and the shortage of services seems to have intensified.

Moreover, under this insurance system, the professional carers are faced with the additional task of administrating the service provision. In order to provide a greater range of services, more precise planning is needed, and care plans must be carefully implemented and evaluated. Additional exchanges of information or communication/recording tasks among the professional carer are also required. Such tasks include face-to-face conversations, record entries, telephone calls, facsimiles, voicemail, and others. With the increasing demand for nursing services covered by the insurance, the associated communication/recording tasks may lower the quality of nursing services.

With the rapid advance of information technology (IT) in recent years, the trend can be found in medical sectors as in many other industries toward improving operational efficiency of services with the help of IT driven management systems (Laerum et al., 2001; Stamouli and Mantas, 2001). These systems allow for efficient processing of electronic medical charts, order entry, administration of materials and laboratory results, etc. In nursing settings also, carers can resort to IT systems to reduce their communication/recording workload, thereby spending more time and energy providing nursing services.

The purpose of this research is to clarify the possible changes induced by the introduction of Japan's new insurance system in terms of number of communication/recording tasks, related nursing services in use, and when and where these tasks occurred. Furthermore, during the periods of time when significant increases in the number of communication/recording tasks were observed, the detailed content of communication/recording was examined to explore the possibility of introducing IT systems to improve the efficiency of the nursing service settings.

2. Methods

2.1. Subject and sessions of research

The subject of this research is a medical institution located in the Mikawa region of Aichi Prefecture, Japan. The institution consists of a clinic with a rehabilitation facility (Clinic), a geriatric intermediate care facility (GICF) (providing a certain amount of medical care), an In-home nursing support center, a helper's station, and a visiting care station, providing nursing services such as visiting medical care, visiting rehabilitation, rehabilitation for outpatients, visiting nutrition guidance, and short-stay services.

The research was conducted in two sessions in February 2000 and August 2000, namely before and after the nationwide introduction of the elderly care insurance system. At each session, all the communication/recording tasks that occurred in relation to nursing service provisions during a continuous 48 h were recorded.

Given the fact that no significant variation in terms of number of users on workdays was shown in a preliminary research, Tuesdays and Wednesdays were selected for both the February and August sessions.

2.2. Content of research

A fill-out-type questionnaire was designed and used for the research (see Fig. 1). The items to fill out were: (1) nursing service in use, (2) type of job, (3) date and time, (4) from whom/what, (5) to whom/what, (6) communication tools and (7) content. The entry was performed by the staff carrying out each particular communication task. A preliminary meeting was held for orientation and instruction as well as to identify any problems with the procedure. The management of the forms was conducted by off-duty staff trained in advance. They were stationed at each facility and their duty was to check and collect the forms as appropriate.

2.2.1. Category of nursing services in use

Utilized in-home nursing services in relation to specific communication tasks were categorized as follows: daycare service at clinic, daycare service at GICF, short-stay service at GICF, in-home helper service, visiting nursing, visiting nutrition guidance, visiting rehabilitation, visiting medication, and others.

2.2.2. Job type

The job types of the staff involved in communication tasks were categorized as follows: physician, nurse, pharmacist, radiological technologist, physical therapist (PT), occupational therapist (OT), trainer, professional carer, consultant, secretary, nutritionist, cook, driver, and others.

2.2.3. Date and time

The specific dates and times when communication tasks occurred were recorded.

2.2.4. From whom/what and to whom/what

When a communication event occurred, the names of the persons involved were recorded in the columns 'From' and/or 'To whom'. When information was referenced and/or recorded

Nursing service in use	Daycare at Clinic	Daycare at Center	Short-stay at Center	Helper	Visiting care	Visiting nutrition guidance	Visiting rehabilitation
User's name	Mr./Ms.			Home visit	Others ( )		
Entered by:				Medical Doctor	Nurse	Pharmacist	Radiological Technologist
Type of Job	PT	OT	Trainer	Nursing staff	Consultant	Office worker	
	Nutritionist	Cook	Driver	Others			
Date/hour of occurrence	Date: day, dd/mm/yy Hour: hh/mm am./pm.						
From whom	Family	User	Staff		Others ( )		
From what	Form/Notes/Voicemail/Others ( )						
To whom	Family	User	Staff		Others ( )		
To what	Form/Notes/Voicemail/Others ( )						
Communication tool	Message	Face-to-face conversation	Voicemail	Notes	Wiseman barcode		Wiseman keyboard
	Extension	Outside line	Facsimile	Entry in charts	Others ( )		
Brief content	Instruction (prescription)		Info	Report	Consultation	Record	Confirmation

Fig. 1. Questionnaire on communication tasks.

in some medium such as recording forms, the type of medium was entered in the column 'To what' and/or 'From what'. Entries in the 'From/To whom' column indicate the involvement of some person categorized as family, user, staff or others. Entries in the 'From/To what' column indicate the involvement of some recording medium categorized as forms, notes, voicemail or others. Forms are any recording medium of paper such as medical records. Notes represent Notes®, a groupware of Lotus. Groupware is any type of software designed for groups and for communication, combining various software for supporting collaboration among a group of people with functions such as email, document management and schedule management.

2.2.5. Communication tools/media

The communication tools/media used in communication/recording tasks were categorized as follows: message, face-to-face conversation, voicemail, Notes, Wiseman Barcode, Wiseman Keyboard, extension call, outside line call, facsimile, medical record entries, references to other forms, and others.

Wiseman Barcode® and Wiseman Keyboard® represent the utilization of the nursing information management system of Wiseman®, making use of barcodes and keyboards, respectively, for data entry. Wiseman Barcode® barcodes date, treatment, person-in-charge of treatment, and vital signs, and then reads them via a reader device. Wiseman Keyboard® utilizes a keyboard for data input.

2.2.6. Content

The content of communication/recording was categorized as follows: instruction (prescription), information, report, consultation, record, confirmation and others. Information means an unofficial communication which does not require reporting or recording.

2.3. Analysis

The changes between the two sessions of research were analyzed in terms of number of users, number of occurrences of communication/recording tasks, and category of service in use in relation to communication/recording tasks that occurred. To eliminate the influence on the number of communication/recording tasks induced by the change in total number of users, the data of the same users (153) was analyzed in both sessions.

Further, for these 153 users, a detailed analysis was conducted for a period of time where a significant change in the number of occurrences of tasks was found.

Data analysis was performed by Statview 5.0. For testing statically significant differences, the chi-square test was utilized with $P < 0.05$ as criteria.

3. Results

3.1. Total number of users and number of occurrences of communication/recording tasks

Table 1 shows the total number of users and the number of occurrences of communication/recording tasks. The total number of users was 400 in February and 442 in the August

Table 1
Number of occurrences of communication/recording tasks

	February	August	P
Overall			
Total number of users	400	442	
Occurrences of tasks	2811	4235	<0.001
153 subjects			
Total number of users	232	249	
Occurrences of tasks	1883	2244	0.300

Note: A chi square test was conducted between February and August sessions on the total number of users divided by the number of occurrences of the task.

session and the number of occurrences of communication tasks was 2811 and 4235, respectively. The increase in the number of occurrences of communication tasks was statistically greater than the increase in the number of total users ($P < 0.001$).

In the analysis of the 153 users whose data was obtained in both sessions, no statistical difference was found in the total number of utilized services, nor in the increase in the number of occurrences of tasks in comparison with the increase in the number of times at which they utilized these services.

3.2. *Category of services*

Table 2 shows the type of utilized in-home nursing service in relation to a particular communication/recording task. In both sessions, more than 80% of all utilized services belonged to one of the three most popular categories, i.e., daycare at clinic, daycare at GICF and short-stay at GICF. In August, both daycare at clinic and daycare at GICF were more often used ($P = 0.002$, <0.001) while short-stay at center was less often used ($P < 0.001$) than in February (Table 3).

Table 2
Number of occurrences of in-home nursing service by category

Service category	February ($N = 1883$)	August ($N = 2244$)	P
Daycare at clinic	340	493	0.002
Daycare at GICF	781	1071	<0.001
Short-stay at GICF	558	390	<0.001
In-home helper	102	107	0.381
Visiting care	86	95	0.656
Visiting rehabilitation	8	11	0.938
Home visit	2	2	0.999
Others	2	7	0.282
Unknown	4	68	<0.001

Note: A chi square test was conducted between February and August sessions. GICF: geriatric intermediate care facility.

Table 3
Number of occurrences of in-home nursing service by place

Place	February ($N = 1883$)	August ($N = 2244$)	P
Clinic	302	464	<0.001
GICF	1263	1434	0.036
At home	143	67	<0.001
Others	172	192	0.550
Unknown	3	87	<0.001

Note: A chi square test was conducted between February and August sessions. GICF: geriatric intermediate care facility.

3.3. Time of occurrence

Fig. 2 indicates the time of occurrence of communication/recording tasks. Peaks were found in the 8:00–12:00 and 14:00–18:00 periods. Also, the number of occurrences was on the rise between February and August in the 8:00–9:00 and 10:00–11:00 periods.

3.4. Detailed analysis of 8:00–9:00 and 10:00–11:00 time periods

Regarding the communication/recording tasks that occurred in the 8:00–9:00 and 10:00–11:00 time periods, when an increase in tasks was observed, was further analysis was

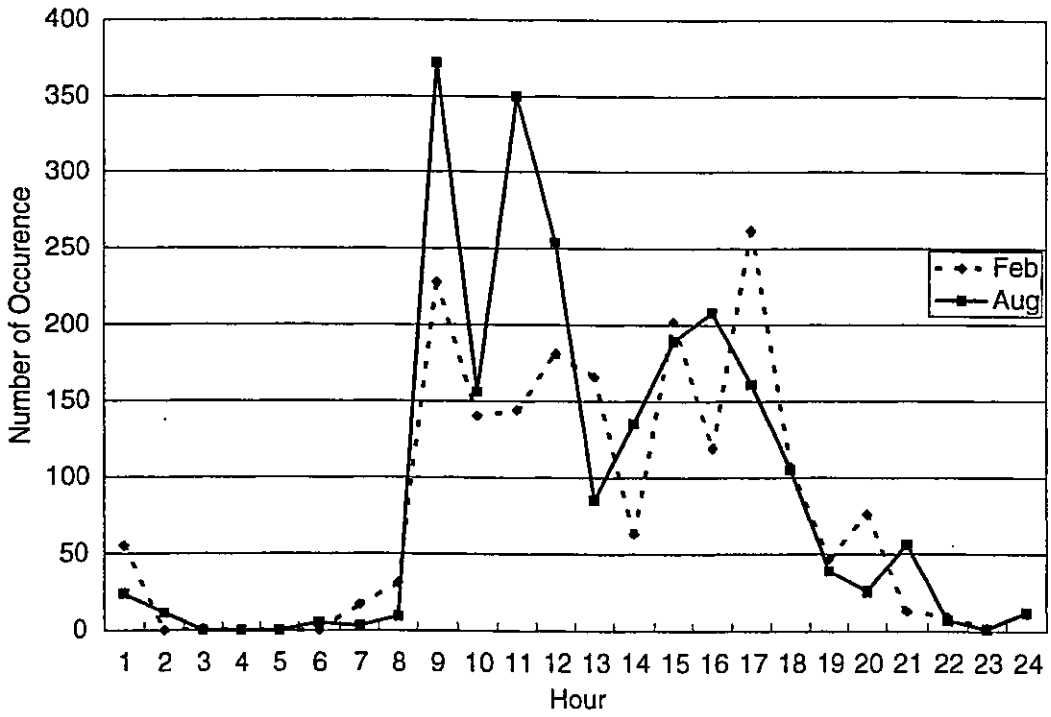

Fig. 2. Time of occurrence of communication/recording tasks. The number of occurrences was on the rise between February and August in the 8:00–9:00 and 10:00–11:00 time periods.

Table 4
Number of occurrences of communication/recording tasks by involved staff's job type

Job type	8:00–9:00		P	10:00–11:00		P
	February ($N = 228$)	August ($N = 372$)		February ($N = 144$)	August ($N = 350$)	
Physician	3	0	–	0	5	–
Nurse	75	68	<0.001	42	40	<0.001
Pharmacist	0	0	–	0	4	–
Radiological technologist	1	0	–	2	0	–
PT	3	4	0.999	2	5	0.999
OT	0	0	–	0	7	–
Trainer	0	0	–	0	0	–
Professional carer	99	266	<0.001	49	187	<0.001
Consultant	11	7	0.071	20	20	0.004
Secretary	12	12	0.307	9	54	0.009
Nutritionist	0	7	–	14	1	<0.001
Cook	0	0	–	0	1	–
Driver	5	2	0.150	4	18	0.359
Others	19	0	–	2	1	0.425
Unknown	0	6	–	0	7	–

Note: A chi square test was conducted between February and August sessions. (–) Indicates that the test could not be conducted. PT: physical therapist; OT: occupational therapist.

conducted to determine the possible changes in job types of the staff involved, communication routes, tools or media in use and contents of communication/recording.

Table 4 shows the job types of staff involved in communication/recording tasks that occurred in the 8:00–9:00 and 10:00–11:00 periods. From 8:00 to 9:00, more professional carers were involved in communication/recording tasks in August (71.5%) than in February (43.4%) ($P < 0.001$). A significant decrease in the number of nurses involved in communication/recording tasks was also observed between August and February ($P < 0.001$).

From 10:00 to 11:00, more professional carers carried out some kind of communication/recording task in August (53.4%) than in February (34.0%) ($P < 0.001$), while significantly less nurses and consultants were involved in communication/recording tasks ($P = 0.004$, <0.001).

Table 5 shows the communication routes in relation to the tasks that occurred at various time periods. In the 8:00–9:00 period, more staff-staff communication took place in August (54.3%) than in February (37.7%) ($P < 0.001$), while less staff's recording to forms was observed in August ($P < 0.001$). However, in the 10:00–11:00 period, the rate of staff-staff communication decreased in August ($P = 0.002$).

Table 6 shows the means by which communication was conducted at various time periods. In the 8:00–9:00 period, face-to-face conversations were most frequently seen in both sessions (79.8% in February, 71.2% in August). However, despite the increase in the number of occurrences of direct conversation, the rate of overall communication decreased ($P = 0.025$). Also, in the 10:00–11:00 period, a decreased rate of direct conversation was found ($P < 0.001$), and voicemail was more frequently used ($P = 0.019$). In this period, a prominent increase in the number of staff using forms was observed, jumping from 0 to 74 times.

Table 5
Number of occurrences of communication/recording tasks during the periods of 8:00–9:00 and 10:00–11:00 by communication route

Communication route	8:00–9:00		P	10:00–11:00		P
	February ($N = 228$)	August ($N = 372$)		February ($N = 144$)	August ($N = 350$)	
Staff ⇒ staff	86	202	<0.001	55	83	0.002
Staff ⇒ records	85	21	<0.001	45	134	0.169
Staff ⇒ others ('What')	19	28	0.841	8	16	0.817
Staff ⇒ user(s)	6	1	0.026	1	7	0.514
Records ⇒ staff	2	9	0.292	0	3	–
User(s) ⇒ staff	2	3	0.999	1	5	0.823
Family ⇒ staff	1	8	0.184	1	4	0.999
Records ⇒ records	1	1	0.999	1	8	0.406
Staff ⇒ family	1	0	–	0	3	–
Staff and/or records ⇒ staff	0	41	–	0	3	–
Staff and/or others ('What') ⇒ staff and/or others ('What')	0	19	–	0	1	–
Staff and/or records ⇒ staff and/or records	0	0	–	0	24	–
Others	22	36	0.999	30	54	0.186
Unknown	3	3	0.853	2	5	0.999

Note: A chi square test was conducted between February and August sessions. (–) Indicates that the test could not be conducted. 'What' refers to medium.

Table 6
Number of occurrences of communication/recording tasks during the periods of 8:00–9:00 and 10:00–11:00 by communication tool

Communication tool	8:00–9:00		P	10:00–11:00		P
	February ($N = 228$)	August ($N = 372$)		February ($N = 144$)	August ($N = 350$)	
Messages	3	3	0.853	3	14	0.429
Direct conversation	182	265	0.025	65	87	<0.001
Voicemails	1	1	0.999	2	25	0.019
Notes	0	0	–	0	0	–
Wiseman Barcode	6	0	–	18	10	<0.001
Wiseman Keyboard	6	3	0.150	4	24	0.117
Extension calls	3	1	0.311	9	0	–
Outside calls	7	10	0.984	1	16	0.061
Facsimiles	0	4	–	0	2	–
Record entries	7	0	–	15	0	–
Reference to forms	9	6	0.131	0	74	–
Others	4	44	<0.001	27	60	0.767
Unknown	0	35	–	0	38	–

Note: A chi square test was conducted between February and August sessions. (–) Indicates that the test could not be conducted.

Table 7
Number of occurrences of communication/recording tasks during the periods of 8:00–9:00 and 10:00–11:00 by content

Communication Tool	8:00–9:00		P	10:00–11:00		P
	February ($N = 228$)	August ($N = 372$)		February ($N = 144$)	August ($N = 350$)	
Instruction	0	1	–	1	17	0.048
Information	180	148	<0.001	58	42	<0.001
Reporting	6	30	0.011	17	17	0.010
Consultation	3	3	0.853	5	5	0.265
Recording	20	13	0.010	51	131	0.750
Confirmation	19	106	<0.001	11	25	0.998
Others	0	33	–	1	9	0.320
Unknown	0	38	–	0	104	–

Note: A chi square test was conducted between February and August sessions. (–) Indicates that the test could not be conducted.

Table 7 shows the breakdown of contents of communication that occurred in the various periods. In the 8:00–9:00 period, information decreased from 78.9 to 39.8% ($P < 0.001$), but more reporting and confirmation were observed ($P = 0.011$, <0.001). In the 10:00–11:00 period, information decreased again from 40.3 to 12.0% ($P < 0.001$) while instruction increased ($P = 0.048$). With respect to reporting, the rate in all communication tasks decreased significantly ($P = 0.010$).

4. Discussions

4.1. Background of the increase in total number of users and communication/recording tasks

This research reveals an increase in total number of users after the introduction of Japan's elderly care insurance system. Even before the implementation of the system, a quantitative increase both in number of users and provision of services (Wada, 1996) had been predicted. In fact, traditionally, the administration (Hattori et al., 2000) determined the nursing services to be provided to users (Hashimoto, 1996; Wada, 1996), but under the new system, users are able to chose the nursing services they wish to receive. The findings of this research seem to support this prediction.

On the other hand, although the overall rate of increase in the number of occurrences of communication/recording tasks was greater than that of users, the analysis of the 153 users who had already used some nursing services before the new system was launched did not reveal any significant increase in the number of occurrences of communication/recording tasks for such users. This suggests that the increase in communication/recording tasks for new users after the adoption of the system was reflected on the overall increase in the number of occurrences of communication tasks. In addition, the possible lack in necessary medical and/or nursing-related information on these new users may have lead to greater information exchange among staff.

Meanwhile, the 153 former users may have benefited from the fact that such information had already been gathered in the institution as they had started using services before the system was launched. However, no trend toward a decrease in the number of communication/recording tasks was observed among these users. The introduction of the elderly care insurance system has undoubtedly brought about some increase in communication tasks. For example, the system requests preciseness in procedure such as the preparation of care plans and the management of nursing service provision, both of which necessarily involve more frequent information exchanges. Also, following the adoption of the system, changes in the type and frequency of services made by users may trigger an increase in communication/recording tasks. According to a report, daycare service provisions increased and short-stay service decreased after the system was introduced in Japan (Miyatake, 2001), and this could also be the case in the subject institution. Changes in users' choices from short-stay service to daycare may prompt an increase of communication/recording tasks because the latter is provided per day and requires more information exchange among staff in comparison with the former. The types and frequency of services in use were not studied in this research. However, an increase in daycare and a decrease in short-stay were observed in the category of utilized services in this research, in agreement with the above-mentioned report.

4.2. Time of occurrence of communication/recording tasks

Firstly, communication tasks were observed more often in the 8:00–11:00 and 14:00–17:00 time periods. The subject institution is open from 9:00 to 16:30, and at 8:30–9:00 and 16:00–16:30, short staff meetings are held for the purpose of exchanging information on short-stay users. The peaks of occurrence of communication/recording tasks in the morning and the afternoon fall respectively around the opening and closing times of this institution, presumably because of these correspond to those times when greater information exchange occurs and patient updates are provided.

Secondly, there are various possible factors behind the steep increase in the number of communication/recording tasks in the 8:00–9:00 and 10:00–11:00 time periods. As mentioned above, these periods fall around the opening time of the institution. In fact, it is inferable that the 8:00–9:00 period corresponds to the time when patient updates and information exchanges take place before opening.

Regarding job types of staff, a more prominent increase in the number of professional carers was noticed as compared to other staff. This suggests that the introduction of the new insurance system may have increased the number of communication/recording tasks performed by the professional carers during specific periods of time. Meanwhile, some reports have indicated that a greater number of inpatient falls occurred during those periods of time when the nurses were busy performing a communication or recording task (Taira et al., 1999; Kanemura et al., 2000). In facilities where nursing care services are also provided, the rush of communication tasks may deteriorate the quality of nursing services and increase the risk of accidents on the part of users. It thus appears necessary to take some measures to prevent such concentration of communication tasks. However, this study is limited in the sense that it does not shed adequate light on the burden put on the professional carers for the following reasons: (1) the study focused on the number of communication