

Intervention to construct a system for defecation care in long-term care health facilities for the elderly

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Intervention to construct a system for defecation care in long-term care health facilities for the elderly

Chiaki Sakakibara, Keiko Tsukasaki*

Abstract

This study was conducted to evaluate the construction of a system for defecation care in long-term care health facilities. Two intervention programs were undertaken, one each for Facility A and Facility B. In both Programs A and B, fecal assessment using the Bristol Stool Scale (BSS) was introduced, and a defecation care leadership development workshop helped staff members to develop a defecation care improvement plan. In Program B, researchers also performed in-house education for 6 months after the workshop to support the defecation care improvement plan. The results were evaluated 1 year after the initiation of the programs. The feces changed from soft or hard to normal in 29.5% of residents in Facility A (Program A) and in 48.3% of residents in Facility B (Program B). The level of resident satisfaction increased significantly in both facilities. There was a significant increase in the number of residents not receiving stimulant cathartics, and the total amount of cathartics used decreased significantly in both facilities. In Program B, all the defecation care improvement plan goals were achieved, and there was a high rate of implementation of defecation assessment by staff. In Program A, some of the defecation care improvement plan goals were not achieved. It is suggested that the promotion of workshops for training defecation care leaders would improve the quality of defecation care. We also confirmed the efficacy of in-house training following the workshops, for the construction of a system for defecation care.

Key words

Defecation care system, functional bowel, Bristol Stool Scale, Soft Systems Methodology in Action, elderly

Introduction

Disorders of defecation cause a loss of self-esteem because of physical and mental distress, resulting in a marked decrease in the quality of life. Therefore, achieving improvement of defecation disorders is an important issue. Elderly residents of long-term care facilities often require nursing care for defecation disorders because of gastrostomy, tube feeding, cognitive disorders, and a high incidence of dyschezia. The treatment of constipation with purgatives may result in incontinence of soft stools¹⁾. Nursing home surveys have shown the incidence of stool incontinence to be 74% in

England²⁾ and 50% in North America³⁾. Despite a high incidence of constipation requiring nursing care in the elderly, care protocols for constipation are not well established⁴⁾. The different definitions of constipation may result in difficulties in appropriate constipation assessment⁵⁾, causing delays in care. The Rome III committee proposed the international definition of constipation in 2006, and encouraged use of the Bristol Stool Scale (BSS), which objectively judges stool properties⁶⁾⁷⁾. However, there has been a delay in the clinical application of the BSS both locally and internationally. There are few studies evaluating the BSS⁸⁾⁹⁾, and

Doctoral Course Division of Health Science, Kanazawa University Graduate School of Medical Science

* Department of Health Development Nursing, Graduate Course of Nursing Science, Faculty of Health Sciences, College of Medical, Pharmaceutical and Health Science, Kanazawa University

the efficacy of using the BSS to assess the elderly requiring nursing care has not yet been determined.

Previous studies of the care of defecation disorders have evaluated abdominal massage in patients with constipation¹⁰⁻¹³, hot fomentation¹⁴, and the effects of biofeedback and sacral nerve stimulation on constipation and stool incontinence^{3,15}. However, the number of subjects in these studies was too small to substantiate the effects of the care protocols. Because most of the studies targeted a wide range of patients^{8,12,16}, and few studies have targeted the elderly requiring nursing care in facilities, the current prevalence of constipation among elderly residents of long-term care facilities, and the care protocols for defecation disorders in this setting, have not been evaluated^{9,17,18}.

Improvement of the defecation care skills of facility staff is important for establishing care for constipation and for achieving improvement of defecation disorders. A study on biofeedback^{1,19}, the Essence of Care by the Department of Health (2003), and a defecation care protocol for elderly residents of long-term care facilities²⁰ have been formulated²⁰, but these have not been fully evaluated. The Japan Continence Action Society and various companies sponsor workshops to educate staff in charge of defecation care. However, as these workshops are mainly undertaken as off-the-job training (Off-JT), it is difficult to determine their actual effects on nursing care in the elderly. It is important to improve the skills of individual staff members, as well as address constipation-related problems on a facility-wide basis. On-the-job training (OJT) and Off-JT are both necessary to improve the care of defecation disorders, and the effects of these programs need to be evaluated.

Study aim

This study was conducted to evaluate the construction of a system for defecation care in long-term care facilities, using the concept of Soft Systems Methodology (SSM)²¹, which has been reported to be effective in similar settings.

Two intervention programs were undertaken, one each for Facility A and Facility B. In both programs, two nurses and two care staff were

chosen from their respective facilities as defecation care leaders, and attended workshops on defecation assessment using the BSS, and on constructing a defecation care and improvement plan. In Program A there was no continued in-house education, and in Program B researchers continued in-house education for 6 months after the workshop to support the defecation care improvement plan developed by defecation care leaders. The effectiveness of each of the two programs was evaluated.

Methods

1. Subjects

Subjects were defecation care leaders, and staff and elderly residents in two long-term care facilities. The two nurses and two care staff who were chosen as care leaders in each facility (eight leaders in total) were referred by administrators of their respective facilities and were all women. The mean age of the leaders was 29.3 ± 5 years in Facility A and 35.0 ± 9.8 years in Facility B. The mean clinical experience time of the leaders was 8.8 ± 4.4 years in Facility A and 8.3 ± 6.5 years in Facility B. All the staff and elderly residents included in the study stayed at their facility for at least 1 year from the initiation of the program. In Facility A, 58 residents with a mean age of 87.1 ± 6.9 years were included, of which 45 (77.6%) were women; and 34 staff members with a mean age of 30.3 ± 10.1 years were included, of which 30 (88.2%) were women. In Facility B, 29 residents with a mean age of 85.5 ± 7.9 years were included, of which 18 (62.1%) were women; and 17 staff members with a mean age of 33.3 ± 9.6 years were included, of which 16 (94.1%) were women.

2. Development of the defecation care protocol

In Facility A, only the defecation care leadership development workshop was held. In Facility B, the defecation care leadership development workshop was followed by in-house education for 6 months.

3. Theoretical framework of the present program (Table 1)

We undertook a research study based on the seven stages of SSM. This is a research approach

Table 1. Intervention method of the present study using Soft Systems Methodology (SSM)

Stage of SSM	Training item	Actions undertaken (Method: time)	Progress and results
Stage 1 Considered problems	Elucidate the problems in defecation care	The four defecation care leaders from each institution and the researchers shared their thoughts and concerns about defecation care in each institution. (Free conversation: 1st day, 2 hours)	The defecation care leaders and researchers gained understanding of the present condition of defecation care. It became clear that there was a lack of information sharing between the staff members.
Stage 2 Stated problems	State the problems: discuss the current situation and challenges in each facility	The eight defecation care leaders and the researchers defined the present condition of defecation care at each institution and discussed ideal care. (Group work: 2nd day, 2 hours)	The defecation care leaders and researchers identified that many residents experience loose stool at both institutions. Ideal care was discussed.
Stage 3 Basic definition of relevant intentional activity system	Analyze and evaluate the defecation care problems in the facility	Nurses and care staff taught knowledge and skills for defecation care in different ways. The defecation care leaders and researchers discussed differences in defecation care according to occupation (nurse or care staff), and ways to resolve any problems that were identified. (Brainstorming and a presentation: 3rd day, 3 hours)	The defecation care leaders and researchers suggested solutions to identified problems, such as specifying that care staff should be involved in defecation care, and that defecation care methods should be standardized.
Stage 4 Conceptual activity model of the system with a basic definition	State the desired defecation care protocol for the facility	The defecation care leaders and researchers discussed activities which would improve the quality of defecation care in their institutions, and developed a model of a defecation care to achieve these activities. (Brainstorming and presentation: 4th day, 3 hours)	The defecation care leaders and researchers identified concrete activities for realization of a desirable defecation care system.
Stage 5 Comparison between the model and reality	Compare the current defecation care system with the desired defecation care protocol	The defecation care leaders and researchers compared the model they desired with the current reality and discussed ways to actively achieve improvements in the quality of defecation care (Group work: 5th day, 3 hours)	The defecation care leaders and researchers identified differences between the model they desired and the current reality. Potential ways to achieve improvement were identified.
Stage 6 Resolution; desirable system and culturally feasible	Develop a plan to implement the defecation care protocol	The four defecation care leaders of each institution consulted with an administrator and other staff to develop a defecation care improvement plan. All eight defecation care leaders and the researchers met to present the plans, exchange opinions, and consider improvements. (Prior research and presentation: 6th day, 4 hours)	The defecation care leaders and researchers developed and discussed specific defecation care improvement plans, and ascertained that implementation of the plans was feasible. Permission was obtained from the administrators of both institutions to implement the plans.
Stage 7 Action to solve problems	Implement the plan	The four defecation care leaders of each institution implemented a part of their defecation care improvement plan, and then discussed progress. (Prior research: 7th day) In Facility A, only the defecation care leaders were involved in implementing the plan. In Facility B, both defecation care leaders and researchers were involved in implementing the plan.	The defecation care leaders and researchers of each institution checked the progress of implementation of the defecation care improvement plans. As a result of a researcher's involvement in Facility B, that institution included the participation of a dietitian in their protocol. As a result of recording each resident's defecation care plan sheet and information (including purgative use) and sharing this information among team members, many residents were cared for differently and their loose stools resolved.

whereby practitioners and researchers work collaboratively to adopt intervention measures to address problems, and assess the effects of the interventions. SSM is used to help develop solutions

and improve measures in an organization. This methodology encourages participants to solve a problem or improve a situation, guiding them through a seven-stage process which involves the

sharing of problems or problematic circumstances, learning, consensus-building, and implementation. Five stages (stages 1, 2, 5, 6, 7) of the SSM consist of real world activities, and two stages (stages 3, 4) consist of systems thinking about the real world.

The intervention program was implemented using both Off-JT and OJT. Off-JT is a capacity-building method designed to help trainees acquire knowledge and skills while learning outside the workplace. Stages 1 to 7 of the SSM were included in the Off-JT sessions of both programs. Stage 7 was then implemented in the facilities. In Program A, stage 7 involved only defecation care leaders who participated in workshops. In Program B, additional OJT was provided by researchers. The aim of the Off-JT workshops was to provide defecation care leaders with the knowledge and skills required for defecation care, including the assessment of stool characteristics and defecation control methods, and to help them design plans to improve defecation care, establish a care protocol in the facility, and advise other facility staff regarding ways to improve the quality of defecation care. OJT is a capacity-building program in which trainees acquire the knowledge and skills necessary for specific tasks in the workplace through their daily work. In OJT approved by the director of the facility and staff, defecation care leaders supported by the researchers provided facility staff with the knowledge and skills necessary to implement the plan for improving defecation care and establish the care protocol. Program A was undertaken from April to September 2008, and Program B was undertaken from April 2008 to March 2009.

4. Defecation care leadership development workshops: Off-JT

At each institution, two nurses and two care staff (n=8) with ≥ 5 years of clinical experience were recruited to attend workshops to train them as defecation care leaders. The workshops included the following items: Stage 1, elucidate the problems in defecation care; Stage 2, state the problems: discuss the current situation and challenges in each facility; Stage 3, analyze and evaluate the defecation care problems in the facility;

Stage 4, state the desired defecation care protocol for the facility; Stage 5, compare the current defecation care system with the desired defecation care protocol; Stage 6, develop a plan to implement the defecation care protocol; Stage 7, implement the plan (Table 1).

Nurses and care staff discussed differences in the way they had been taught knowledge and skills for defecation care (Stage 3). Care staff placed emphasis on observation of stool characteristics, recording methods, and improving the posture of care recipients while using the toilet. Nurses helped to develop skills to assess stool characteristics based on observations and records, and to make decisions regarding the selection of defecation care methods including the preparation of laxatives.

The researchers organized the workshops to train defecation care leaders, and provided intervention as group facilitators and participating observers.

The BSS classifies feces into seven types according to its physical characteristics as follows. Type 1: separate hard lumps, like nuts (hard to pass). Type 2: sausage-shaped, but lumpy. Type 3: similar to a sausage but with cracks on its surface. Type 4: similar to a sausage or snake, smooth and soft. Type 5: soft blobs with clear-cut edges (easily passed). Type 6: fluffy pieces with ragged edges; mushy stool. Type 7: watery with no solid pieces; entirely liquid.

5. In-house education: OJT

Researchers participated in the plans for achieving goals, evaluation, implementation, and continuous improvement, according to the defecation improvement plan developed by the defecation care leaders (Stage 7, Table 1). The intervention included providing knowledge and skills for defecation care, consultation and advice, encouragement of continuous plan implementation, participation in the in-house defecation care committee, participation in case examinations and giving advice, and cooperation with the administration.

Support from the administration of the institutions was not formally recorded. However, administrators at both institutions were soon convinced of the desirability of such a program, and were cooperative

as manifested by offering their encouragement to the leaders, and by showing flexibility with regard to adjusting working schedules and interactions with other occupations.

6. Data collection

The staff and residents included in the study comprised the persons who were at the institution at program initiation, and stayed during the entire investigation period of 1 year. No new staff members or residents who arrived during the year were included in the study.

1) Characteristics of the residents

The age, sex, admission time, diseases, and Functional Independence Measure (FIM)²²⁾ of residents were recorded. The FIM was evaluated by trained occupational or physical therapists.

2) Urination

The utilization of an indwelling catheter, diaper, commode, and toilet were recorded for each resident.

3) Nutrition

Mean daily calorie, fiber, and water intake, and any eating disorders, dysphagia, or tube feeding were recorded for each resident by a nutritionist.

4) Defecation

For each resident, the frequency of defecation, fecal properties, use of a purgative, stimulant, antifatulent, suppository, enema, or disimpaction, and the amount of purgative and stimulant agents used over 1 month were recorded at the initiation of the program and at 1 year. Researchers gave instructions on evaluating the BSS to defecation care leaders, followed by 2-week in-house training for leaders and staff. Fecal properties were evaluated as follows based on the Rome III criteria⁶⁾²³⁾. The Rome III criteria are an international standard for the diagnosis of irritable bowel syndrome (IBS). IBS is categorized into four types: constipation (hard stools or scybalum account for 25% or higher of the total, and loose or watery stools account for less than 25% of the total), diarrhea (loose or watery stools account for 25% or higher of the total, and hard stools or scybalum account for less than 25% of the total), mixed (hard stools or scybalum account for 25% or higher of the total, and loose or watery stools also account for 25% or

higher of the total), and unclassified types. The use of the BSS is recommended for this categorization.

Resident satisfaction level was recorded using a seven-step Quality of Life score. The highest score was 6 (very satisfied), and the lowest score was 0 (very unsatisfied). The use of a diaper, commode, or toilet for defecation was recorded.

5) Characteristics of staff members

Sex, age, years of working experience, years of experience in the current facility, and educational background were recorded for each care worker.

6) Degree of implementation of defecation assessment

The following eight objective assessment items were recorded for each resident: abdominal bloating, bowel peristalsis, defecation frequency, findings on rectal examination, pain on defecation, amount of stool, comfort after defecation, diarrhea and watery stool. The following eight subjective assessment items were recorded: abdominal bloating, passage of flatus, defecation frequency, feeling of incomplete evacuation, pain on defecation, amount of stool, comfort after defecation, diarrhea and watery stool. Each of these 16 items was evaluated on a 5-point scale from 5 (always) to 1 (seldom), giving a maximum total of 80 points.

7) Self-efficacy score

The standardized points of the General Self-Efficacy Scale (GSES) were used to record GSES scores for each resident.

8) Achievement status of the defecation care improvement plan

The goals and methods of the defecation care improvement plan were developed by defecation care leaders in each facility in the defecation care leadership development workshop. The status of goal achievement was assessed by interviews with defecation care leaders and administrators after 1 year.

7. Investigation period

The present program was undertaken for 6 months from April to September 2008 in Facility A, and for 1 year from April 2008 to March 2009 in Facility B. Data were collected in April 2008 at the initiation of the program, and in March 2009.

8. Statistical analysis

Pearson's χ^2 test was performed to compare characteristics of the two facilities at program initiation. Corresponding t-test and McNemar's test were performed to compare data at program initiation and at 1 year. Two-way repeated measures ANOVA was performed to compare defecation, urination, and nutrition variables of each facility between program initiation and 1 year later. Analysis was undertaken using SPSS version 11.5 and JMP®7 software. A p-value of <0.05 was considered statistically significant. The achievement status of the defecation care improvement plan was determined by defecation care leaders and

administrators.

9. Ethical considerations

The present study was approved by the Medical Ethics Committee of Kanazawa University (receipt number Ho-115, January 23, 2008). The objectives and methods of the study were explained to representatives and defecation care leaders of the two facilities, and written consent was obtained after the explanation. The study was explained to the residents and their families by facility staff, and consent was obtained. Collected data were quantitatively processed and analyzed to avoid identification of the individuals or facilities.

Table 2. Attributes of residents at program initiation, and comparison of attributes, urinary status, and nutritional conditions between program initiation and 1 year later

Facility		A n=58			B n=29			
Item		Program initiation	One year later	Comparison between program initiation and 1 year later p value †	Program initiation	One year later	Comparison between program initiation and 1 year later p value †	
		Age (years)		87.1 ± 6.9			85.5 ± 7.9	
Sex	Males	13(22.4)			11(37.9)			
	Females	45(77.6)			18(62.1)			
Admission period before intervention (months)		8.5 ± 11.2			8.1 ± 9.2			
Disease	Sequelae of cerebrovascular disorders	26(43.3)			12(41.4)			
	Sequelae of fractures	23(38.3)			10(34.5)			
	Digestive disease/surgery	17(28.3)			11(37.9)			
	Diabetes	11(18.3)			9(31.0)			
	Mental disorders	9(15.0)			5(17.2)			
	Others	9(15.0)			3(10.3)			
Functional Independence Measure	Motor item (13–91 points)	34.7 ± 22.8	44.6 ± 24.0	0.0001	55.3 ± 23.5	49.4 ± 22.5	0.04	
	Cognitive item (5–35 points)	16.6 ± 11.0	18.5 ± 9.0	n.s	19.1 ± 8.5	18.6 ± 8.8	n.s	
	Total (18–126 points)	51.3 ± 32.4	63.1 ± 31.5	0.001	74.4 ± 29.3	68.0 ± 29.2	0.04	
Urinary management (1–7 points)		4.2 ± 2.2	3.6 ± 2.2	0.03	3.1 ± 2.1	3.2 ± 2.1	n.s	
	Bowel management (1–7 points)	4.2 ± 2.0	3.6 ± 2.0	0.01	4.7 ± 2.1	4.8 ± 2.1	n.s	
Level of care needed ‡	Nursing care levels 1 · 2	25(48.1)	20(34.5)	—	12(41.4)	13(44.8)	—	
	Nursing care levels 3 · 4 · 5	33(56.9)	38(65.5)	—	17(58.6)	16(55.2)	—	
Urination status	Indwelling catheter	2(3.4)	2(3.4)	—	1(3.4)	0(0.0)	—	
	Diaper	15(25.9)	20(34.5)	—	4(13.8)	5(17.2)	—	
	Commode	24(41.4)	24(41.4)	—	13(44.8)	11(38.0)	—	
	Toilet	17(29.3)	12(20.7)	—	11(38.0)	13(44.8)	—	
Nutritional condition	Daily calorie intake (Kcal)	1424 ± 199	1458 ± 249	n.s	1267 ± 130	1183 ± 344	n.s	
	Daily fiber intake (g)	13.7 ± 2.4	13.9 ± 2.7	n.s	16.8 ± 2.9	14.9 ± 3.6	0.03	
	Daily water intake (cc)	994 ± 336	1021 ± 386	n.s	929.3 ± 413	862.5 ± 411	n.s	
	Presence of eating disorders and dysphagia	Present	7(12.1)	9(15.5)	—	22(75.9)	23(79.3)	—
		Not present	51(87.9)	49(84.5)	—	7(24.1)	6(20.7)	—
	Tube feeding	Present	55(94.8)	54(93.1)	—	27(93.1)	27(93.1)	—
Not present		3(5.2)	4(6.9)	—	2(6.9)	2(6.9)	—	

Number of people (%) or mean ± standard deviation

† : corresponding t-test

‡ : Long-term Care Insurance in Japan

— : Unanalyzable because of the small number of patients

n.s=not significant

Table 3. Comparison of defecation status between program initiation and 1 year later

Facility	A n=58			B n=29		
	Program initiation	One year later	Comparison between program initiation and 1 year later p value †	Program initiation	One year later	Comparison between program initiation and 1 year later p value †
The number of defecation days (day/1M)	22.9 ± 14.0	20.4 ± 11.2	n.s	18.5 ± 7.6	21.1 ± 11.8	n.s
Level of satisfaction (0: very unsatisfied – 6: very satisfied)	1.9 ± 0.8	2.2 ± 0.8	0.02	2.1 ± 1.0	2.6 ± 0.6	0.02
Amount of lapactic used over 1 month (mg)	87.8 ± 168.6	26.4 ± 37.7	0.04	23.9 ± 15.5	16.6 ± 17.6	0.03
Amount of stimulant agents over 1 month (mg)	120.6 ± 277.8	38.2 ± 122.9	n.s	122.6 ± 202.2	13.4 ± 48.0	n.s
Defecation method	Diaper	13(22.4)	20(42.5)	2(6.9)	1(3.4)	
	Commode	20(34.5)	18(31.0)	15(51.7)	14(48.3)	—
	Toilet	25(43.1)	20(34.5)	12(41.4)	14(48.3)	

Number of people (%) or mean ± standard deviation

† : corresponding t-test

– : Unanalyzable because of the small number of patients

n.s=not significant

Results

1. Training program

Table 1 shows the contents of the training program, including actions, progress and results at each stage of the SSM model.

2. Residents

1) Comparison of resident characteristics, urination, nutrition, and defecation between the two facilities at program initiation

No significant differences were observed in age, sex, or admission time, or in defecation, urination or nutrition of the residents between the two facilities at the initiation of the program.

2) Comparison of resident characteristics, urination, nutrition, and defecation between program initiation and 1 year later

In facility A, the mean FIM motor score increased significantly from 34.7 to 44.6 ($p=0.0001$, Table 2). The FIM total score increased significantly from 51.3 to 63.1 ($p=0.001$, Table 2). The FIM bladder management score decreased significantly from 4.2 to 3.6 ($p=0.03$, Table 2). The FIM bowel management score decreased significantly from 4.2 to 3.6 ($p=0.01$, Table 2). The level of satisfaction improved significantly from 1.9 to 2.2 ($p=0.02$, Table 3). The amount of lapactic used decreased significantly from 87.8 mg to 26.4 mg per month ($p=0.04$, Table 3).

In Facility B, the FIM motor score decreased

significantly from 55.3 to 49.4 ($p=0.04$, Table 2). The FIM total score decreased significantly from 74.4 to 68.0 ($p=0.04$, Table 2). The daily fiber intake decreased significantly from 16.8 to 14.9 ($p=0.03$, Table 2). The level of satisfaction improved significantly from 2.1 to 2.6 ($p=0.02$, Table 3). The amount of lapactic used decreased significantly from 23.9 mg to 16.6 mg per month ($p=0.03$, Table 3).

Table 4 shows changes in defecation status of the residents 1 year after the initiation of the program using McNemar's test. Fecal properties and use of stimulant cathartics changed significantly in both facilities. Feces changed from soft or hard to normal in 25.9% of residents in Facility A and in 48.3% of residents in facility B. Use of stimulant cathartics was stopped in 22.4% of residents in facility A and in 41.3% of residents in facility B.

Two-way repeated measures ANOVA showed that there was no significant change in the level of satisfaction at 1 year ($F=1.2$, $p=0.28$). A significant difference was observed between the two facilities ($F=13.1$, $p=0.001$), suggesting a significantly higher level of satisfaction in Facility B compared with Facility A.

3. Staff

1) Comparison of staff characteristics at program initiation between the two facilities

No significant differences were observed in characteristics of staff members, opportunities to

Table 4. Changes in defecation status of the residents 1 year after the initiation of the program

Facility		A n=58			B n=29		
Defecation status after 1 year		Status since program initiation			Status since program initiation		
		Unchanged	Changed	p value †	Unchanged	Changed	p value †
Desire to defecate	Present	43(74.1)	2(3.5)	n.s	20(69.0)	3(10.3)	n.s
	Not present	6(10.3)	7(12.1)		5(17.2)	1(3.5)	
Fecal property	Normal	34(58.6)	15(25.9)	0.01	13(44.8)	14(48.3)	0.0002
	Soft, or Hard	5(8.6)	4(6.9)		2(6.9)	0(0.0)	
Use of lapactic agent	Present	15(25.9)	6(10.3)	n.s	8(27.6)	1(3.5)	n.s
	Not present	22(37.9)	15(25.9)		15(51.7)	5(17.2)	
Use of stimulant cathartics	Present	10(17.2)	4(6.9)	0.03	1(3.5)	1(3.5)	0.002
	Not present	31(53.5)	13(22.4)		15(51.7)	12(41.3)	
Use of antifatulents	Present	2(3.5)	3(5.2)	n.s	0(0.0)	0(0.0)	—
	Not present	49(84.4)	4(6.9)		29(100)	0(0.0)	
Use of suppository	Present	0(0.0)	1(1.7)	—	6(20.7)	3(10.3)	n.s
	Not present	57(98.3)	0(0.0)		11(38.0)	9(31.0)	
Use of enema	Present	0(0.0)	0(0.0)	—	0(0.0)	0(0.0)	—
	Not present	58(100)	0(0.0)		28(96.5)	1(3.5)	
Disimpaction	Present	8(13.8)	5(8.6)	n.s	4(13.8)	4(13.8)	n.s
	Not present	35(60.4)	10(17.2)		18(62.1)	3(10.3)	

Number of people (%)

† : McNemar’s test

— : Unanalyzable because of the small numbers of patients

n.s=not significant

learn defecation care, defecation assessment implementation, or self-efficacy score between the two facilities at the initiation of the program.

2) Comparison of the level of implementation of defecation assessment and self-efficacy

between program initiation and 1 year later

In Facility A, there were no significant differences in defecation assessment implementation score or self-efficacy score between program initiation and 1 year later (Table 5).

Table 5. Attributes and opportunities for learning defecation care of staff at program initiation, and comparison of defecation assessment implementation and self-efficacy between program initiation and 1 year later

Facility		A n=34			B n=17			
Item		Program Initiation	One year later	Comparison between program initiation and 1 year later p value †	Program Initiation	One year later	Comparison between program initiation and 1 year later p value †	
Attribute	Sex	Males	4(11.8)		1(5.9)			
		Females	30(88.2)		16(94.1)			
	Age (years)		30.3 ± 10.1		33.3 ± 9.6			
	Years of experience		8.2 ± 1.9		7 ± 6.4			
	Years of experience in the current facility		2.9 ± 2.5		1.5 ± 0.9			
Opportunities for learning defecation care	Present	7(20.6)			7(41.1)			
	Not present	27(79.4)			10(58.9)			
Level of implementation of defecation assessment (80-point scale)			44.7 ± 11.5	48.2 ± 10.4	n.s	45.2 ± 10.6	50.6 ± 11.0	0.007
Self-efficacy (General Self-Efficacy Scale standardized score: 115-point scale)			41.2 ± 8.0	41.3 ± 9.8	n.s	39.9 ± 9.3	41.5 ± 8.3	n.s

Number of people (%) or mean ± standard deviation

† : corresponding t-test

n.s= not significant

Table 6. Achievement of the defecation care improvement plan in facility A

Goals		Methods	Implementation status	Evaluation	
Improvement of the defecation care knowledge and skills of staff	1	To integrate the knowledge and skills of staff	<ul style="list-style-type: none"> Workshop by guest teachers Study sessions taught by defecation care leaders 	<ul style="list-style-type: none"> A workshop for defecation care assessment was held, and 16 staff members (half of the entire staff) participated in the workshop. Since not all staff attended, the integration of defecation knowledge and skills could not be achieved. Study sessions taught by defecation care leaders could not be achieved due to the decreasing motivation. 	Unachieved
The effort by the organization as a whole	2	To understand defecation care needs of staff	<ul style="list-style-type: none"> Questionnaires for staff 	<ul style="list-style-type: none"> Questionnaire High interest for defecation care assessment The topic for the workshop theme was used by guest speakers 	Achieved
	3	To promote defecation care provided by care workers	<ul style="list-style-type: none"> Make an effort to address defecation care by defecation care leaders 	<ul style="list-style-type: none"> Abdominal massage, yogurt, stretching, and toilet guidance 	Achieved
	4	To share information regarding residents' defecation status among staff	<ul style="list-style-type: none"> Information sharing among staff using a defecation checking table introducing BSS 	<ul style="list-style-type: none"> All the staff filled in the defecation checking table for 1 year to share information 	Achieved
	5	To integrate the selection of defecation care methods among nurses	<ul style="list-style-type: none"> A defecation care manual was devised by defecation care leaders to integrate selection standards of the defecation care method 	<ul style="list-style-type: none"> Unable to achieve because of decreased motivation of defecation care leaders 	Unachieved
	6	To share information regarding the status of residents and staff among defecation care leaders	<ul style="list-style-type: none"> A defecation care committee was developed by defecation care leaders for regular information sharing 	<ul style="list-style-type: none"> Unable to achieve because of decreased motivation of defecation care leaders 	Unachieved
	7	To comprehend the number of elderly requiring nursing care	<ul style="list-style-type: none"> Screening of lapactic users with hard and soft stools from the defecation checking table by defecation care nurses 	<ul style="list-style-type: none"> Screening was performed to identify residents who were in need of defecation care 	Achieved
	8	To review the defecation care method of the elderly with soft-stool to reduce the number of soft stools	<ul style="list-style-type: none"> Defecation care methods of soft-stool patients were reviewed considering the protocol by defecation care leader nurses 	<ul style="list-style-type: none"> Cathartics were reviewed for soft stool patients 	Achieved

Shaded area: mutual goals between facility A and B

In Facility B, defecation assessment implementation score increased significantly from 45.2 to 50.6 ($p = 0.007$, Table 5).

4. Achievement status of the defecation care improvement plan

1) Achievement of the defecation care improvement plan in facility A (Table 6)

There were eight defecation care goals in Facility A: (1) to integrate the knowledge and skills of staff; (2) to understand defecation care needs of staff; (3) to promote defecation care provided by care workers; (4) to share information regarding

residents' defecation status among staff; (5) to integrate the selection of defecation care methods among nurses; (6) to share information regarding the status of residents and staff among defecation care leaders; (7) to determine the number of residents requiring nursing care; and (8) to review the defecation care methods of elderly residents with soft stools to reduce the number of soft stools. Goals (1), (5), and (6) were not achieved. One reason for this was decreased motivation for defecation care improvement, as defecation care leaders were too busy fulfilling other responsibilities.

Table 7. Achievement of the defecation care improvement plan in facility B

Goals		Methods	Implementation status	Intervention by researchers	Evaluation	
Improvement of the defecation care knowledge and skills of staff	1	To integrate the knowledge and skills of staff	<ul style="list-style-type: none"> Information was given to staff by defecation care leaders on site Information was given through the defecation checking table assessment Information was given through the defecation care conference 	<ul style="list-style-type: none"> Information was given to staff by defecation care leaders at assessment Caregivers informed soft and hard stool patients, and assessment ability improved Defecation conferences were held twice a month, resulting in improvement of selection ability of the defecation care method of staff 		Achieved
	2	To discuss difficult defecation care cases to improve knowledge and skills	<ul style="list-style-type: none"> Case examination of defecation care leaders and researchers 	<ul style="list-style-type: none"> A case conference (4-5 cases) was held once a month to provide practical learning opportunities participation of nutritionists 		Achieved
The effort by the organization as a whole	3	To promote defecation care provided by care workers	<ul style="list-style-type: none"> Defecation care was addressed by care workers including defecation care leaders 	<ul style="list-style-type: none"> A step was introduced to help maintain posture during defecation, and 2 residents became able to defecate. Hot fomentation, toilet guidance, and exercise were achieved. 	1. Provide knowledge and skills (twice a month) 2. Instruction in method of BSS interpretation 3. Promotion of cooperation between physicians, dieticians, pharmacists, physical therapists, and occupational therapists 4. Consultation and advice in defecation care committee meetings and case conferences (twice a month) 5. Encouragement to continue (twice a month) 6. Cooperation with managers	Achieved
	4	To share information regarding residents' defecation status among staff	<ul style="list-style-type: none"> Information was shared among staff using the defecation checking table introducing BSS 	<ul style="list-style-type: none"> All the staff recorded the defecation care checking table for 1 year to share information Introduction of the defecation care planning sheet (defecation care goals, methods, implementation, and evaluation of each resident were recorded) was effective for information sharing among staff 		Achieved
	5	To integrate the selection of defecation care methods among nurses	<ul style="list-style-type: none"> Confirmation of the defecation care method of each nurse at the defecation care conference, and instructions were given by defecation care leader nurses 	<ul style="list-style-type: none"> The defecation care method of each nurse was checked at a defecation care conference, it was integrated following the program, and specified in the defecation care planning sheet 		Achieved
	6	To share information regarding the status of residents and staff among defecation care leaders	<ul style="list-style-type: none"> Regular information sharing in the defecation care committee developed by defecation care leaders 	<ul style="list-style-type: none"> A defecation care committee was held once a month to share information. Knowledge, skills, and motivation were improved. 		Achieved
	7	To comprehend the number of elderly requiring nursing care	<ul style="list-style-type: none"> Screening of lapactic users with hard and soft stools from the defecation checking table by defecation care nurses 	<ul style="list-style-type: none"> Screening was performed, and residents in need of defecation care improvement were recognized 		Achieved
	8	To review the defecation care method of the elderly with soft-stool to reduce the number of soft stools	<ul style="list-style-type: none"> The defecation care methods of the elderly with soft-stool were reviewed following the protocol developed by defecation care leaders Doctor were approached 	<ul style="list-style-type: none"> Lapactics used by the elderly with soft stool were reviewed Content of Lapactics was reviewed by doctor 		Achieved
	9	To cooperate with other professions	<ul style="list-style-type: none"> Nutritionists and occupational therapists were approached 	<ul style="list-style-type: none"> Content of meals was reviewed by nutritionists Position during defecation was reviewed by occupational therapists 		Achieved

Shaded area: mutual goals between facility A and B

2) Achievement of the defecation care improvement plan in facility B (Table 7)

There were nine defecation care goals in Facility B. Goals (1) and (3)-(8) were the same as in Facility A. Goal (2) was to discuss difficult defecation care cases to improve knowledge and skills, and goal (9)

was to cooperate with other professions. Support by researchers included (1) providing knowledge and skills (twice a month), (2) instruction in methods of BSS interpretation, (3) promotion of cooperation between physicians, dieticians, pharmacists, physical therapists, and occupational therapists, (4) consultation

and advice in defecation care committee meetings and case conferences (twice a month), (5) encouragement to continue (twice a month), and (6) cooperation with managers. Facility B achieved all nine goals.

Discussion

1. Significance of this study

Despite the high incidence of defecation disorders in the elderly which require care²¹⁾²⁴⁾, there are few reports on achieving improvements in the care of defecation disorders¹⁷⁾ and on effective care methods with a scientific basis¹⁾. The present program aimed to construct a defecation care protocol to improve the quality of care for defecation disorders in long-term care facilities. A program was developed to train defecation care leaders in facilities to improve the knowledge and skills of staff, and to promote defecation care in facilities. The program was based on a seven-stage SSM model, and was developed to consider current defecation care and construct new defecation care protocols. SSM is a systematic methodology used to solve problems with an obscure background.

2. Efficacy of the defecation care leadership development workshop: Off-JT

A defecation care improvement plan was developed and implemented by defecation care leaders of the two facilities at the workshops. In both facilities, we found that there was an increase in residents with normal stool and in resident satisfaction, and a decrease in the use of stimulant cathartics and laxatives at 1 year. These results indicate the effectiveness of the defecation care leadership development workshops. In the present study, fecal properties were recorded using the BSS and were presented as objective data. Although the use of the BSS was encouraged by the Rome III committee in 2006⁶⁾, it has not been effectively employed locally or internationally. A 2-week long training course was held to teach defecation care leaders how to use the BSS. This training enabled staff to perform defecation assessments of residents, suggesting the potential for introducing the BSS in clinical settings.

3. Efficacy of OJT

The implementation level of defecation assessment was increased in facilities with in-house education following the defecation care leadership development workshop. Methods of information sharing and participation of people with different backgrounds in case examinations were added to the defecation care improvement plan developed in the workshop. Bennar²⁵⁾ reported that organizational support is important for training staff and for developing skills of nursing staff. Nursing organizations have a particular culture²⁶⁾, and it is important that support is suitable to the specific organizational culture²⁷⁾, suggesting that in-house education for each facility is important. Researchers shared information on the facility status evaluated by defecation care leaders before intervening in the organizational culture. This enabled the provision of support appropriate to the organization cultures.

This original system featuring in-house education following a defecation care leadership development workshop was effective for the construction of a defecation care system. Further evaluation and improvement of this system and more widespread use could significantly improve the care of residents of long-term care facilities.

4. Limitations of the present study

The number of subjects in the two facilities was too small to generalize the results. It will be necessary to perform further studies on this program to validate the present results, and to improve the quality of the present program.

5. Proposal for nursing

Following the workshops for training defecation care leaders in long-term care facilities, which aimed to improve the control of defecation through assessment of stool characteristics, there was a decrease in the use of laxatives and an increase in the level of satisfaction among the residents. It is suggested that the promotion of workshops for training defecation care leaders would improve the quality of defecation care in Japan and other countries. It is important to provide in-house education to support defecation care protocols for each facility.

Conclusion

A defecation care leadership development program introducing the BSS was undertaken in two facilities, followed by an in-house education intervention program in one facility, to construct defecation care protocols for use in long-term care facilities. As a result, feces changed from soft or hard to normal in 30–40% of residents, and the level of resident satisfaction improved. The use of stimulant cathartics decreased significantly to 20–40% of residents, and the total use of laxatives also decreased. The facility that received in-house education after the workshop showed a high rate of implementation of defecation assessment by staff, and achieved all their defecation care improvement plan goals. These results suggest that the present program was effective in constructing a care protocol for defecation disorders in long-term care facilities, and improved the quality of care for these disorders.

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介護老人保健施設における排便ケアシステムの構築を目指した介入

榊原 千秋, 塚崎 恵子*

要 旨

本研究の目的は、施設における排便ケアシステムの構築を目指した介入を行い、その効果を評価することである。施設内において排便ケアシステムを構築するため、2つのプログラムを作成した。2つのプログラムは、A施設またはB施設のそれぞれで実施した。プログラムAは、The Bristol Stool Scaleを用いて便の性状をアセスメントして便通コントロールをする能力、および排便ケアリーダーが排便ケア改善計画を立案して実施し、評価する能力の育成のため、6ヶ月間の研修会を実施した。プログラムBは、研修会後も引き続き6ヶ月間、施設内における排便ケア改善計画の実施を支援するための組織内教育を加えた。A施設はプログラムA、B施設はプログラムBの対象とした。

2つのプログラムの効果は1年後に評価した。入所者の便の性状は2つのプログラムとも1年後に有意に変化しており、軟便または硬便から普通便に改善した者の割合は、プログラムAが29.5%、プログラムBが48.3%だった。入所者の満足度は2つのプログラムとも有意に高くなった。2つのプログラムとも刺激性下剤を使用しない者の割合は有意に増加しており、施設全体の緩下剤の使用量は有意に減少した。プログラムBは、以上の成果に加えて、スタッフの排便アセスメントの実施度は有意に高くなり、排便ケア改善計画の目標のすべてを達成した。しかし、A施設では目標の一部が達成できなかった。以上の結果より、研修会により、スタッフの便の性状のコントロール能力の向上の効果が示唆された。さらに研修会後に組織内教育を行なうことで、施設内の排便ケアのシステムの構築における有効性が示唆された。