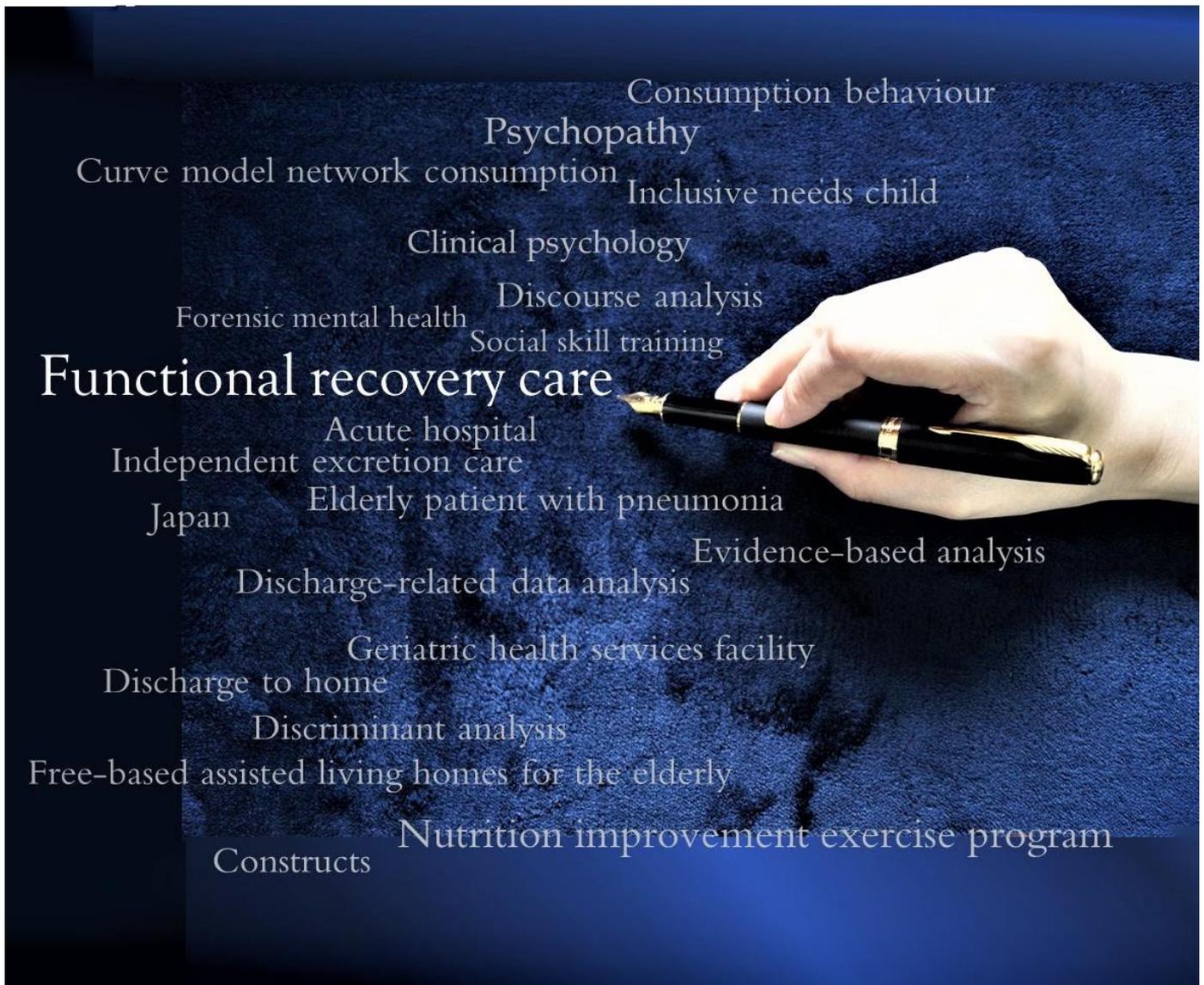


Asian Journal of
**HUMAN
SERVICES**

Printed 2018.430 ISSN2188-059X
Published by Asian Society of Human Services

April 2018
VOL. 14



ORIGINAL ARTICLE

Survey to Assess Information-gathering During the Process of Designing Care Plans Regarding Nutrition Improvement

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ABSTRACT

The present study aimed to clarify information-gathering during the process of designing care plans regarding nutrition improvement in nursing care insurance services. A total of 2,000 nursing care insurance service providers were randomly selected from the nursing care insurance service networks throughout Japan, and an anonymous self-completed questionnaire survey was conducted care managers. This study identified a low rate of including nutrition indices as information-gathering items during the process of designing care plans regarding nutrition improvement. This was suggested to be attributable to the type of service, fundamental qualifications, and education. To design care plans aimed at nutrition improvement for older people requiring care, it is necessary to provide care managers with standardized education on nutrition indices and older people's independence. In addition, the need for education in basic professional education courses was suggested.

<Key-words>

nutrition improvement, care plans, information-gathering, education

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Asian J Human Services, 2018, 14 11-23. © 2018 Asian Society of Human Services

Received
December 1, 2017

Revised
January 5, 2018

Accepted
January 25, 2018

Published
April 30, 2018

I. Introduction

Malnutrition is the factor for older people to require care. The revision of the Long-Term Care Insurance Act in 2006 included care prevention and preventing the level of care need from becoming higher, and nutrition management was introduced as the mainstay of the revision. However, according to the “Research on Comprehensive Evaluation and Analysis regarding the Effects of Care Prevention Programs” in 2008, among particular older people or those requiring support who may continue requiring care after the initiation of care prevention programs, individuals requiring nutrition improvement account for approximately 30% of the older people. (Tsuji, Ueda, Okubo, et al., 2009) In addition, according to the “Survey Report about Understanding the Eating Condition and Nutritional Status of Patients Receiving Home-Based Care” in 2012, approximately 30% of the older people receiving home-based care suffer malnutrition based on the MNA-SF (Mini Nutritional Assessment-Short Form) and BMI (Body Mass Index) [National Center for Geriatrics and Gerontology, 2012]. Thus, as issues regarding: 1) older people starting to require care and 2) the level of care need becoming higher, malnutrition has yet to be resolved.

This may be attributable to the absence of systems whereby identifying the risk of malnutrition among older people (analysis) leads to care approaches that facilitate nutrition improvement (problem-solving). Regarding the identification of such a risk, in 2014, researchers conducted an awareness survey concerning the nutritional status of older people requiring care involving nursing care insurance service workers, and revealed that both home-based and facility workers were hardly aware of the BMI and Alb levels, which are indices of nutritional status. (Fujio & Kodaira, 2014) These results suggested that information-gathering and -sharing for identifying the risk of malnutrition were not standardized. In 2015, a survey was conducted to assess the nutritional status and mental/physical function of facility users and at-home older people requiring care who utilized nursing care insurance services. As a result, correlations were noted between Alb levels and the following 4 factors: the BMI, dietary habits, dietary intake, and locomotion ability. This indicated that these 4 factors may be predictors of Alb levels. (Fujio, Ogawa, Inoue, et al., 2016) In 2016, a survey was conducted to assess the nutritional status and mental/physical function of older housing facility users, which were not covered by nursing care insurance. This identified correlations between malnutrition and the locomotion ability/cognitive dysfunction. (Fujio, Shimada, Sugiyama, et al., 2017) These results suggested that older people with malnutrition start requiring care or require more care.

Against this background, the present study investigated information-gathering during the process of designing care plans regarding nutrition improvement in nursing care insurance services. Care plans are designed through a procedure from information-gathering, to analyses, and then to planning (care plan designing process).

The present study aimed to clarify whether or not information was gathered in order to determine the risk of malnutrition among older people.

II. Subjects and Methods

1. Study and Procedures

1) Study Design

A quantitative, descriptive study (anonymous self-completed questionnaire survey)

2) Study Period

Between November 2016 and December 2016 (2 months)

3) Subjects

Care managers providing nursing-care insurance services

4) Study Items

Basic attributes: age, sex, type of service, type of profession (medical profession or welfare profession), years of experience, number of charges. Information-gathering items: body weight, BMI (Body Mass Index), the serum albumin (Alb) level, food style, dietary intake, fluid intake, appetite, eating assistance, susceptibility to choking, eating posture, dental condition, ability to walk, consciousness level, taking medicine, life will, economic condition. Reasons for not including nutrition indices as information-gathering items. Education on nutrition indices.

5) Ethical Considerations

This study was conducted with the approval of the Ethics Committee of the Faculty of Health Science and Nursing, Juntendo University (approval number: 28-06). The following were explained to the subjects: Participation in the questionnaire survey must be based on their own free will. As the survey was anonymous, individuals could not be identified. Obtained data would be coded, analyzed, and used only for the present study. Only people who had consented to the study participated in it, and the completion of the questionnaire form was regarded as the consent.

2. Data Collection

Concerning data collection, 2,000 facilities were randomly extracted from the Welfare and Medical Service Network System (WAM NET) of all 47 prefectures in Japan.

3. Statistics Analysis

Using SPSS Statistics Ver. 22.0, analyses were performed to clarify whether or not correlations existed between the presence/absence of nutrition indices as information-

gathering items and basic attributes/education on nutrition indices. The age of the subjects, years of experience, and the number of people of whom they were in charge were analyzed using the unpaired t-test. The type of service and type of profession were analyzed using cross-tabulation, followed by chi-square tests. The level of significance was set at 0.05. In addition, the subjects were asked to freely describe the reasons for not including nutrition indices as information-gathering items, as well as opportunities for education on nutrition indices, and their descriptions were analyzed.

III. Results

A total number of 780 (response rate: 38.0%) completed questionnaires were collected, and 714 (effective response rate: 35.7%) subjects provided effective answers.

1. Basic Attributes (Table.1)

The mean of age 47.33 ± 9.68 (Min: 23, Max: 76). Male 172 (24.1%), female 542 (75.9%). Regarding the type of service, 263 (36.8%) of facility and 451 (63.2%) at-home care managers, respectively. The most common fundamental qualification was certified care worker ($n=478$ [66.9%]), followed by nurse ($n=78$ [10.9%]). Concerning the type of profession, 526 (73.6%), 144 (20.2%), and 44 (6.2%) subjects were welfare professionals, medical professionals, and others, respectively. The average duration of experience was 7.35 ± 4.68 (Min: 0.2, Max: 21.0) years, and the average number of people of whom each subject was in charge was 38.13 ± 23.40 (Min: 1, Max: 150).

2. Information-gathering Items (Table.2)

The investigation items for information-gathering comprised those that were suggested to be related to the nutrition status of older people requiring care based on previous studies of malnutrition risk-related factors (Takahashi, 2006), malnutrition indices (Fujio, Ogawa, Inoue, et al., 2016), oral function training, and assessment items for dietary support (Kikutani, Yoneyama, Teshima, et al., 2005). As shown in Table 2, the factor least commonly included as an information-gathering item was Alb levels (23.9%), followed by the BMI (52.1%). These factors are indices of nutrition status.

3. Presence or Absence of Education on Nutrition Indices

The numbers of subjects receiving and not receiving education on nutrition indices were 177 (24.8%) and 537 (75.2%), respectively.

<Table.1> Basic attributes (%) n=714

Age		47.33±9.68
Sex		
	Male	172(24.1)
	Female	542(75.9)
Type of service		
	Facility	263(36.8)
	At-home	451(63.2)
Basic license		
	Doctor	0(0.0)
	Nurse	78(10.9)
	Physical therapist	1(0.1)
	Occupational therapist	3(0.4)
	Nutritionist	52(7.3)
	Dental hygienist	10(1.4)
	Care worker	478(66.9)
	Social worker	48(6.7)
	Other	44(6.2)
Type of profession		
	Medical profession	144(20.2)
	Welfare profession	526(73.6)
	Other	44(6.2)
Years of experience		7.35±4.68
Number of charges		38.13±23.40

<Table.2> Information-gathering items (%)n=714

Information-gathering items	No	Yes
Body weight	109(15.3)	605(84.7)
BMI (Body Mass Index)	342(47.9)	372(52.1)
Alb (serum albumin) level	543(76.1)	171(23.9)
Food style	34(4.8)	680(95.2)
Dietary intake	299(41.9)	415(58.1)
Fluid intake	341(47.8)	373(52.2)
Appetite	200(28.0)	514(72.0)
Eating assistance	13(1.8)	701(98.2)
Susceptibility to choking	47(6.6)	667(93.4)
Eating posture	334(46.3)	380(53.2)
Dental condition	73(10.2)	641(89.8)
Ability to walk	37(5.2)	677(94.8)
Consciousness level	228(31.9)	486(68.1)
Taking medicine	30(4.2)	684(95.8)
Life will	85(11.9)	629(88.1)
Economic condition	187(26.2)	527(73.8)

4. Relationships between the Presence/Absence of Nutrition Indices and Basic Attributes/ Education on Nutrition Indices (Table.3) (Table.4)

The BMI was included for a significantly higher percentage of subjects in charge of care plans than those with the average number of assigned care plans, Alb levels were significantly higher for subjects younger than the mean age, and these levels were significantly higher for subjects in charge of a higher number of care plans ($p<0.05$). No correlations were noted between years of experience and the BMI/Alb levels. The BMI and Alb levels were higher for facilities than at-home care managers ($p<0.05$). The BMI and Alb levels were higher for medical than welfare professionals ($p<0.05$). The BMI and Alb levels were higher for subjects receiving education on nutrition indices than those not receiving it ($p<0.05$).

<Table.3> Correlations between the BMI and basic attributes/education on nutrition indices (%) n=714

	BMI				P
	No (%)		Yes (%)		
	Mean ± SD		Mean ± SD		
Age ¹⁾	337		366		0.112
	47.94 ± 9.50		46.78 ± 9.82		
Years of experience ¹⁾	337		368		0.112
	7.19 ± 4.52		7.50 ± 4.84		
Number of charges ¹⁾	327		362		0.000***
	32.69 ± 18.81		43.06 ± 25.94		
Type of service ²⁾					0.000***
	Facility	70 (26.6)	199 (72.4)		
	At-home	272 (60.3)	179 (39.7)		
Type of profession ²⁾					0.000***
	Medical profession	52 (36.1)	92 (63.9)		
	Welfare profession	270 (51.3)	256 (48.7)		
Education of nutrition ²⁾					0.000***
	No	283 (52.7)	254 (47.3)		
	Yes	59 (33.3)	118 (66.7)		

¹⁾ Unpaired t-test ²⁾ χ^2 test *** $p < 0.001$

<Table.4> Correlations between Alb levels and basic attributes/education on nutrition indices (%) n=714

	Alb level				P
	No		Yes		
	Mean	SD	Mean	SD	
Age	536		167		0.005**
	47.93 ± 9.43		45.43 ± 10.26		
Years of experience	537		168		0.466
	7.28 ± 4.65		7.59 ± 4.81		
Number of charges	524		165		0.000***
	34.20 ± 18.89		50.66 ± 30.83		
Type of service					0.000***
	Facility	120 (45.6)	143 (54.4)		
	At-home	423 (93.8)	28 (6.2)		
Type of profession					0.000***
	Medical profession	91 (63.2)	53 (36.8)		
	Welfare profession	419 (79.7)	107 (20.3)		
Education of nutrition					0.000***
	No	432 (80.4)	105 (19.6)		
	Yes	111 (62.7)	66 (37.3)		

1) Unpaired t-test 2) χ^2 test ** $p < 0.005$ *** $p < 0.001$

5. Reasons for Nutrition Indices Not Being Included (Table.5)

A total of 99 (91 [91.9%] welfare and 8 [8.1%] medical professionals) free descriptions were provided concerning the reasons for nutrition indices not being included as information-gathering items. The rates of including nutrition indices as information-gathering items significantly differed between medical and welfare professionals and, therefore, we categorized the 91 free descriptions provided by welfare professionals for whom the rates of including the BMI and Alb levels were low. As a result, the most common category was the [difficulty of information-gathering] (n=41), which was divided into the following 6 subcategories: the <<difficulty of keeping track of Alb levels (14)>>, <<nutrition indices not regarded as information items (11)>>, <<lack of information sources concerning nutrition (9)>>, a <<shortage of measuring equipment (5)>>, <<refusal by users (1)>>, and <<being busy (1)>>. The category of a [lack of knowledge and low-level awareness regarding nutritional status] (n=37) was divided into the following 6 subcategories: <<not feeling the need (19)>>, a <<lack of knowledge on nutrition (7)>>, <<issues that need to be resolved other than those related to nutrition (5)>>, <<leaving nutrition-related issues up to other professionals and/or families (4)>>, <<not receiving

inquiries from services (1)>>, and <<paying attention to the way to eat only (1)>>. In addition, the category of [feeling the need for information on nutrition indices] (n=13) was divided into <<gathering information only when necessary (10)>> and <<information gathering by registered dietitians (3)>>.

<Table.5> Reasons for nutrition indices not being included
 (Responses made by welfare professionals alone) n=91

Category	Subcategory	Number
Difficulty of information-gathering	Difficulty of keeping track of Alb levels	14
	Nutrition indices not regarded as information items	11
	Lack of information sources concerning nutrition	9
	Shortage of measuring equipment	5
	Refusal by users	1
	Being busy	1
Lack of knowledge and low-level awareness regarding nutritional status	Not feeling the need	19
	Lack of knowledge on nutrition	7
	Issues that need to be resolved other than those related to nutrition	5
	Leaving nutrition-related issues up to other professionals and/or families	4
	Not receiving inquiries from services	1
Feeling the need for information on nutrition indices	Paying attention to the way to eat only	1
	Gathering information only when necessary	10
	Information gathering by registered dietitians	3

6. Opportunities for Education on Nutrition Indices (Table.6)

A total of 145 free descriptions were provided regarding opportunities for education on nutrition indices, and were categorized. Of these, 127 (87.6%) and 18 (12.4%) were about [practical training] and [professional education courses], respectively. Among the subcategories of [practical training], <<training provided by dietetic associations (36)>> was the most common, followed by <<training for care managers (26 [17.8%])>>, <training provided by organizations to which each subject belonged (25)>>, <<training provided by medical centers (21)>>, <<training provided by administrative bodies (9)>>, <<training provided by companies (4)>>, <<training provided by community-based comprehensive support centers (4)>>, <<training provided by academic societies to which each subject belonged (1)>>, and <<training provided by certified care worker associations (1)>>. The

category of [professional education courses] comprised <<nursing education courses (9)>> and <<other education courses (9)>>.

<Table.6> Opportunities for education on nutrition indices (n=145)

Education	Detailed educational opportunities	Number
Practical training	Training provided by dietetic associations	36
	Training for care managers	26
	Training provided by organizations to which each subject belonged	25
	Training provided by medical centers	21
	Training provided by administrative bodies	9
	Training provided by companies	4
	Training provided by community-based comprehensive support centers	4
	Training provided by academic societies to which each subject belonged	1
	Training provided by certified care worker associations	1
Professional education courses	Nursing education courses	9
	Other education courses	9

IV. Discussion

Focusing on information-gathering during the process of designing care plans regarding nutrition improvement, we conducted a survey for care managers throughout Japan. Concerning the basic attributes of the respondents, the most common fundamental qualification was certified care worker (60%), followed by nurse (10%). This finding is similar to a report made by the “Survey Report on the Quality of Long-Term Home Care Support Service Providers and Care Managers’ Work (Mitsubishi Res. Inst., Inc; 2014)” that the most common qualification of care managers was certified care worker (63.4%), followed by nurse (11.5%). Thus, the results of our study may reflect Japan’s entire trend.

Information-gathering, which was the focus of our study, is the beginning of a process in which care managers design care plans, and is also a beginning of care management required of these managers under the nursing care insurance system of Japan. Care management is implemented through a series of procedures from understanding facts accurately, to clarifying the issues by analyzing facts by means of certain approaches, to design plans to resolve these issues, and then to executing the plans. (Shirasawa, Hashimoto & Takeuchi, 2006) Information-gathering corresponds to the above-mentioned understanding. Against this background, in the present study, we investigate whether or

not nutrition-related items were included in information-gathering aimed in order to discuss nutritional status. As a result, the factor least commonly included as an information-gathering item was Alb levels (approximately 20%), followed by the BMI (approximately 50%), despite the fact that these items are indices of nutritional status. In previous studies, Alb levels and the mental/physical function of elderly people requiring care were suggested to be related to their locomotion ability and cognitive function. (Fujio, Shimada, Sugiyama, et al., 2017) Also, in dementia care, study meetings were held for families that aimed at improving body water, nutrition, activities, and bowel movements as fundamental care, which resulted in an increase in the rate of alleviating cognitive symptoms. (Kodaira & Takeuchi, 2015) On the basis of these previous studies, the finding that nutrition indices were not sufficiently investigated in our study needs to be recognized as an issue regarding older people requiring more care.

Analyses revealed that both the BMI and Alb levels showed correlations with the number of people of whom each subject was in charge, type of service, type of profession according to fundamental qualifications, and presence/absence of education on nutrition indices. These indices were included as information-gathering items for care managers who were in charge of many people. This result is consistent with a high rate of including nutrition indices as information-gathering items care managers of facilities. We suggest because the number of people of whom each staff member is in charge is higher in facilities than at-home, and various professionals, including medical professionals, are responsible for nutritional management in the facilities. This was also suggested in relation to the type of fundamental qualification, and the rate of including nutrition indices as information-gathering items was higher for medical than welfare professionals. These results indicate that nutrition indices are less likely to be included as information-gathering items for care manager at-home and those with welfare qualifications. This may be attributable to a report that approximately 30% of the older people receiving home-based care suffer malnutrition (National Center for Geriatrics and Gerontology, 2012). In addition, welfare professionals, who account for 70% of care managers, most commonly report the [difficulty of information-gathering] as the reason for not including nutrition indices as information-gathering items, which suggest the need to do so as a common practice during a care-plan designing process regardless of the type of service/professional.

The rate of including nutrition indices as information-gathering items was higher for care managers receiving education on both the BMI and Alb levels. Another reason for nutrition indices being not included as information-gathering items was because of a [lack of knowledge and low-level awareness regarding nutritional status], which indicated the importance of education on nutrition indices. In addition, among the descriptions concerning the detailed educational opportunities of care managers receiving education, 80% was about [practical education], 17.8% (n=26) was about compulsory <<care manager training>>, and other educational opportunities were voluntary. There is a need to provide care managers with standardized practical education on nutrition indices and older

people's independence. Concerning the necessity of practical training, in order to develop the quality care managers and promote care management, it is necessary to advance their expertise by improving training for current managers. (Shirasawa, Hashimoto & Takeuchi, 2006) In addition, the category of [professional education courses] was only reported by 20% of the subjects, and various fundamental qualifications are required of care manager, which suggests the need for education on nutrition indices.

The present study identified a low rate of including nutrition indices as information-gathering items during the process of designing care plans regarding nutrition improvement. This was suggested to be attributable to the type of service, fundamental qualifications, and education. To design care plans aimed at nutrition improvement for older people requiring care, it is necessary to provide care managers with standardized education on nutrition indices and older people's independence. In addition, the need for education in basic professional education courses was suggested.

IV. Acknowledgment

The authors wish to thank for care managers of the nursing care insurance service networks throughout Japan. This work was supported by JSPS KAKENHI Grant No. 16K12218. (Interprofessional Cooperation ICT Program Development aimed at "Nutrition Improvement")

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Published by
Asian Society of Human Services
Okinawa, Japan