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[LETTER]

Development of a nursing operations support system focused on hospital admission tasks

KAGAWA Shota¹**< Abstract >**

Japan faces a severe nursing shortage due to an aging population and declining birthrates. This affects nursing skills and patient care quality. This study aims to create a system to support nursing tasks, especially during hospital admissions. At Hospital A in Tokyo, we collected admission documents, studied workflows, and analyzed nurses' time use. We then developed a comprehensive support system with IT engineers. The system includes ; Automated work pattern creation. / Task progress tracking. / Task-specific information. / Documentation via voice, camera, and text. This system can improve nursing efficiency and care quality by reducing repetitive tasks and enhancing learning for less experienced nurses. Future work will optimize the system using real-world data.

Key words: Nurse shortage Workflow efficiency Admission task support

1 Introduction

The need for more nurses is a severe problem in the Japanese medical field. The demand for nurses increases as the population ages, but the supply needs to catch up. In addition, nursing colleges that supply nurses are experiencing a decline in students' academic ability and motivation due to the declining birthrate. The decline in basic academic skills in nursing education is directly linked to a lack of practical skills in clinical settings, which, combined with a shortage of nurses, may cause a decline in the quality of patient care in the future. This study aims to develop a nursing work support system to promote nurses' work efficiency, with a particular focus on hospital admission tasks

where tasks are complex and intricate.

II Method

To define the requirements for a nursing operation, support system, we gathered information at Hospital A in Tokyo. We collected a set of documents used at the time of admission to the hospital, received an explanation of the general workflow at the time of admission from the nurse in charge of admission, and conducted a time study of the nurses responsible for admission during the day shift. We then organized the hospitalization workflow based on the data we had collected. We then created a workflow diagram and worked with the IT engineer to develop a complete system picture.

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III Result

Part of the nursing operations support system conceived because of the study is illustrated in Figure 1. This system has the following four subsystems:

1. A "Work Standardization System" that automatically creates hospitalization work patterns by inputting patients, hospitalization conditions, etc.
2. "Task Management Support System" which allows users to input the completion or incompleteness of each task associated with the created hospitalization work patterns and check the progress status of each task
3. "Task Support System" that enables confirmation of information required for each task (items, observations, and points to keep in

mind in operations)

4. "Documentation Support System" that can document observed information with voice, camera, and text

IV Discussion

Introducing a nursing operation support system will allow nurses to devote more time to patient care by automating repetitive routine and information management tasks. For less experienced nurses, using the system also provides a learning opportunity to acquire practical skills. Suppose the time and effort required for education are reduced. In that case, it can reduce educational exhaustion and nurses' ability to focus on their original duties. Furthermore, the system's operation may lead to improved visualization of operations and more

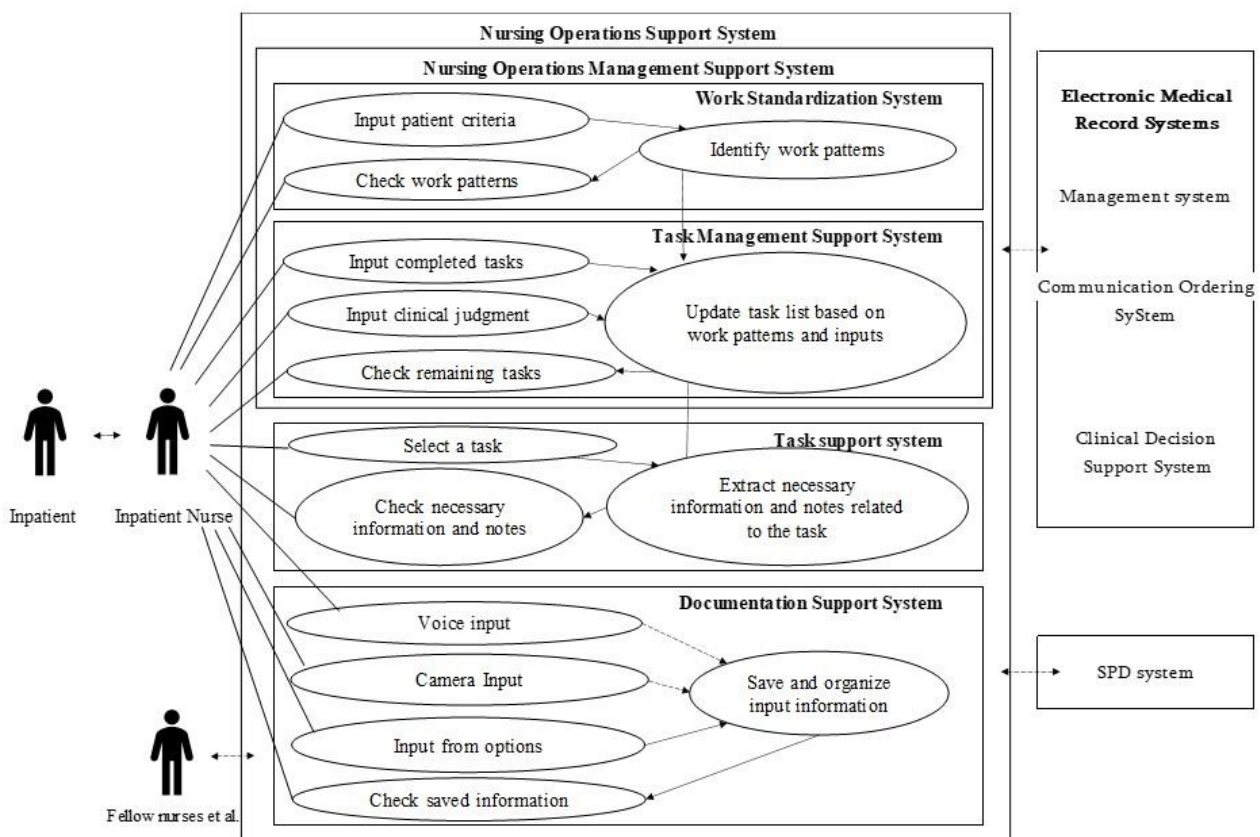


Figure 1 Nursing Operations Support System (for hospital admission tasks)

efficient nursing management, thereby improving the quality of medical care. In the future, our goal is to realize a more effective nursing work support system by collecting operational data in an experimental environment and at actual sites to improve and optimize the system.

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[LETTER]

Muscle-related nutritional components of sarcopenia in older Asian women: a literature review of randomized controlled trials

KINOSHITA Hiroe²

< Abstract >

In today's aging society, maintaining physical strength in the elderly is crucial to prevent sarcopenia, which affects about 20% of Japanese individuals aged 75–79 and increases mortality and disability risk. Lower estrogen levels are linked to muscle weakness, especially in menopausal women. While resistance exercise is known to help, dietary intake also plays a key role in muscle health. A systematic review of RCTs from 2014–2024 found that supplements like soy, whey protein, HMB, vitamin D, essential amino acids, and Korean mistletoe extract can improve muscle mass, strength, and function in Asian women aged 65 and older. Further research combining nutrients and exercise is needed.

Key words: Sarcopenia Nutritional Interventions Muscle Strength

I Introduction

In today's super-aging society, it is important for elderly people to maintain their physical strength to maintain their own and their families' quality of life and to prevent the need for nursing care. With aging, disuse muscle atrophy results from decreased physical activity and reduced dietary intake, leading to sarcopenia.

Sarcopenia is diagnosed when either muscle strength or physical performance declines, with loss of muscle mass as a prerequisite. According to a study published in 2020, sarcopenia affects about 20% of both men and women aged 75 to 79 among the general Japanese elderly, and about 30% of men and half of women aged 80 have sarcopenia. It is

known that sarcopenia increases the risk of all-cause mortality and disability by about twice.

Epidemiological studies have indicated an association between lower blood estrogen levels and muscle weakness, making it important to take early preventive measures for women entering events such as menopause, when estrogen levels decline. As a general preventive measure, it has been widely known that continued resistance exercise reduces the decline in physical function, but adequate dietary intake and diet are also important factors in the increase and hypertrophy of muscle fibers by promoting skeletal muscle metabolism.

Identification of effective dietary

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interventions for women could lead to reduction of sarcopenia and related diseases in the elderly. This time, as a systematic literature review, we examined randomized controlled trials (RCTs) on muscle-related nutritional components of sarcopenia in Asian women aged 65 years and older.

II Method

PubMed was undertaken. RCTs from 2014 to 2024 that assessed nutrition interventions on muscle mass, muscle strength, and physical function in female participants were included.

III Result

Based on the inclusion criteria, 8 RCTs were included. Study designs and interventions differed in the type and dosage of supplements, age and duration of application. Seven RCTs reported the beneficial effects of soy, leucine-rich whey protein, oral nutritional supplements (ONS) containing beta-hydroxy beta-methyl butyrate (HMB), vitamin D alone, essential amino acid supplementation plus catechin-fortified tea, Korean mistletoe extract (KME) supplement were reported to have beneficial effects on muscle mass, strength, and muscle function through muscle protein synthesis.

IV Conclusion

Several nutrients are likely to have effects on the muscle-related component of sarcopenia in older Asian women to maintain physical function. Further investigation of nutrients that may be effective in preventing sarcopenia is warranted, as they may be more effective

when combined with resistance exercise and dietary interventions necessary for muscle metabolism.

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[LETTER]

Weight Changes in Setting Energy Reduction Goals for Specific Health Guidance

KIYOKAWA Takuma³

< Abstract >

Since 2008, health checkups and guidance for insured persons aged 40 to 74 aim to reduce lifestyle-related disease risks. This study compares weight changes from same day versus later health guidance focused on exercise or diet. Participants in 2023 received either same-day or later health guidance, targeting energy reduction through exercise or diet. Ethical approval was secured, and data were stored securely. Of 185 participants, 113 received same-day guidance and 72 later. Average weight loss was 0.12 kg same-day and 0.31 kg later. Diet-focused guidance yielded -0.21 kg same-day and 0.49 kg later; exercise-focused guidance showed 1.71 kg later and -0.3 kg same-day. Both guidance timings led to weight loss, with diet-focused same-day and exercise-focused later guidance being most effective. Time constraints limited same-day exercise guidance efficacy, favoring diet advice, while later sessions better facilitated lasting exercise behavior changes.

Key words: Health guidance Weight loss Exercise and diet

I Introduction

Specific health checkups and health guidance have been implemented since 2008, with the fourth phase starting in 2024. They target insured persons aged 40 to 74 under employment insurance and national health insurance. Health guidance refers to the support provided to individuals assessed to have a high risk of developing lifestyle-related diseases based on specific health checkup results, with potential for significant improvement through lifestyle changes. Many health insurance providers recommend conducting health guidance on the same day as

the specific health checkup, aiming to analyze in detail the effects of immediate health guidance to enhance its effectiveness. This study therefore focuses on analyzing changes in body weight based on set energy reduction goals targeting exercise or diet during health guidance provided on the specific health checkup day versus subsequent days.

II Method

Participants included those who received health guidance on the same day or later in the fiscal year 2023, underwent final evaluations, and focused on whether they aimed to reduce

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	Overall average	Exercise-focused	Equal amount	Food-focused
On the day	0.12	-0.21	-0.44	0.49
At a later date	0.31	1.71	-1.40	-0.30

Figure1 Relationship between reduced energy intake and body weight through diet and exercise

more energy through exercise or diet. The study was conducted after ethical approval and scrutiny for ethical issues at the facility, with data storage secured in key-locked shelves onsite.

III Result

A total of 185 participants received health guidance, with 113 receiving it on the same day and 72 later. The average weight loss among those receiving health guidance on the same day was 0.12 kg, compared to 0.31 kg among those receiving it later. Among those who received health guidance on the same day, the average weight loss was -0.21 kg for those focusing more on energy reduction through exercise and 0.49 kg for those focusing more on diet. Among those who received health guidance later, the average weight loss was 1.71 kg for those focusing more on energy reduction through exercise and -0.3 kg for those focusing more on diet.

IV Discussion

It appears that both same-day and later health guidance contributed to average weight loss. However, differences emerged depending on whether the emphasis in energy reduction goals was on exercise or diet. Guidance

focusing on diet on the same day and on exercise later seemed to have a significant impact on weight loss. Same-day health guidance is constrained by limited time, making it difficult to provide sufficient guidance on exercise, whereas dietary behaviors, easily conveyed verbally, are preferred. Conversely, in later sessions with ample time, understanding and practicing exercise techniques may leave a more lasting impact on user behavior compared to diet instructions.

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