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A Basic study on application of voice recognition technology to an electronic nursing record system

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Introduction

Computerization in the nursing field has been progressing and an electronic nursing system is gradually introduced in Japan.

But

- The present system cannot increase the time for nursing patients.

Because

- Information entry for the system is made by keyboard operation.

Common nurses are unfamiliar with keyboard operation.

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Purpose

We intended to apply voice recognition technology to the information entry of an electronic nursing record system.

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To increase in time for nurses to touch patients and improve the quality of nursing by shortening the recording time for the system.

- Purpose of this study : Basic investigation for applying a voice recognition tool as substitution of keyboard.

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- Construction of the system suitable for the filed of nursing practice.

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Method

- Contrivance of a template for the nursing record
  - Quick and easy input operation by voice recognition
  - Easy information processing after input
- Patient foundation information
  - Gordon's Health Pattern typology

The nursing record of the object

- Progress record
  - Focus charting
  - Time-dependent record
- Verification experiment
  - The comparison of the input time with the keyboard operation
  - Questionnaire investigation

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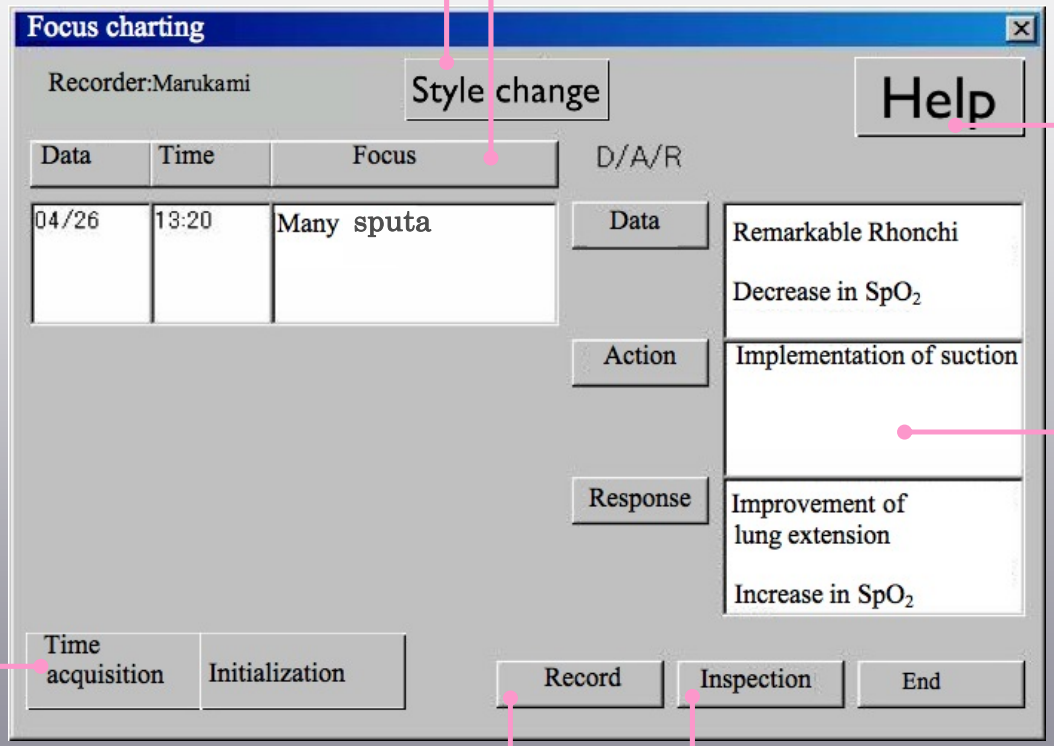
Screen shot 1

The input screen of the progress record
(focus charting)

The window selection can be made by saying “style change”.
Styles :
①focus charting
②time-dependent record
③summary

Referring to Screen shot 4.



Navigation function.
The next procedure is guided by saying "help."

Referring to Screen shot 4.

The date and the time is automatically entered by saying "time acquisition".

The entered contents are converted to a database by saying “record”.

All the records can be read by saying "inspection".
Referring to Screen shot 4.

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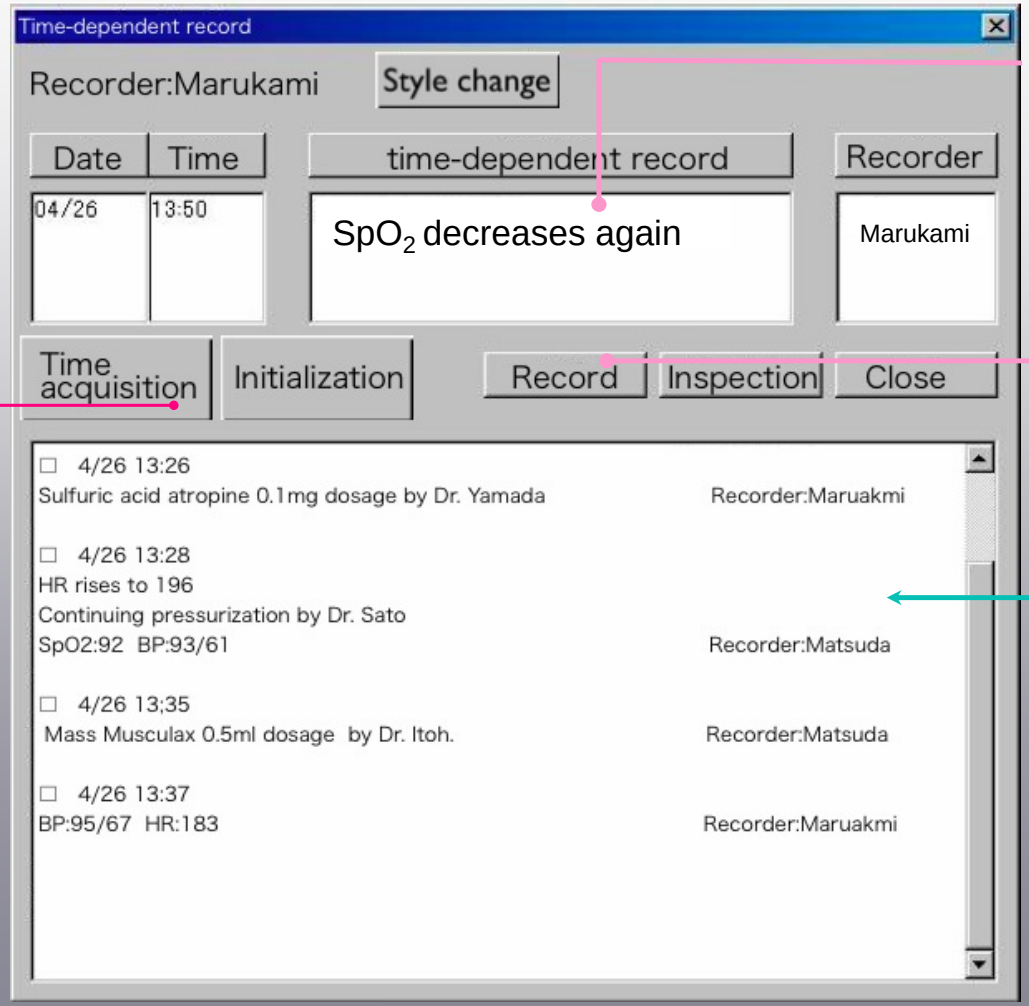
Screen shot 2

The input screen of the time-dependent record



Right after "time" is said, input of the time-dependent record becomes possible at once.

The date, the time and the name of the recorder is automatically entered by saying "time acquisition".

The content of the record is converted to a database by saying, "Record", and the content of the record is enumerated under the window in detail.

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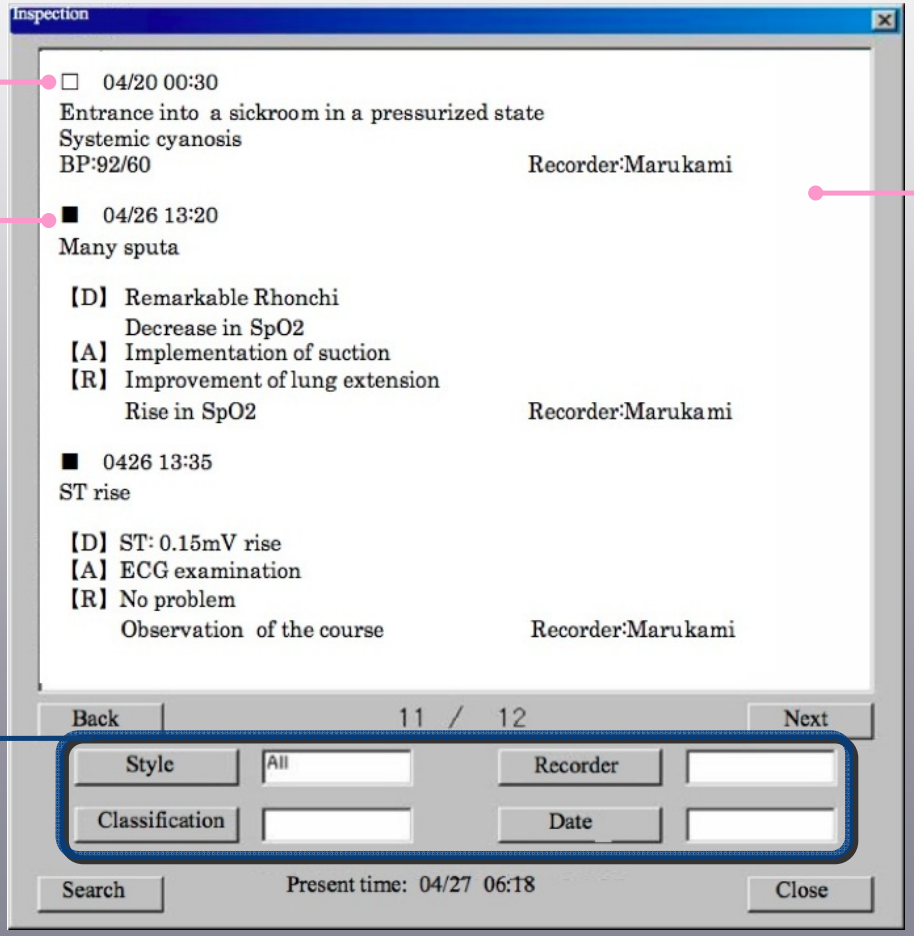
Screen shot 3

A display and a search of the record

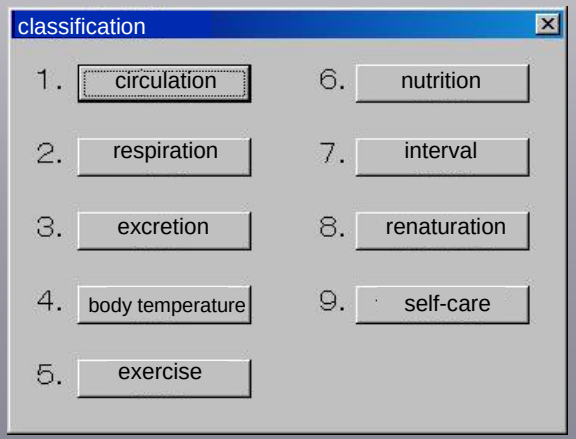
input screen of focusing or time-dependent record, this window is indicated by saying "inspection".

"□" should be inserted before showing the time-dependent record.
"■" should be inserted before showing the focus charting.



In default, the patient's latest record is indicated.

A record can be referred by the voice of keywords, "style", "classification", "recorder" and "date". When each keyword is given, the selection window is indicated except for the date.



An example of selection window

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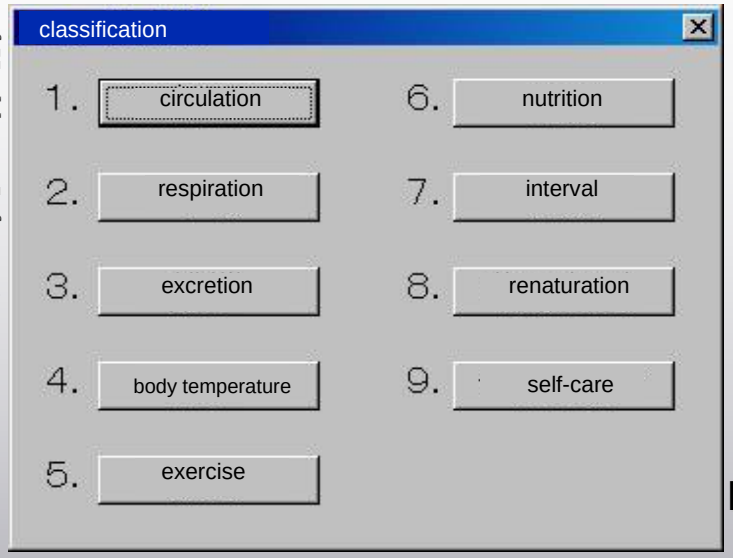
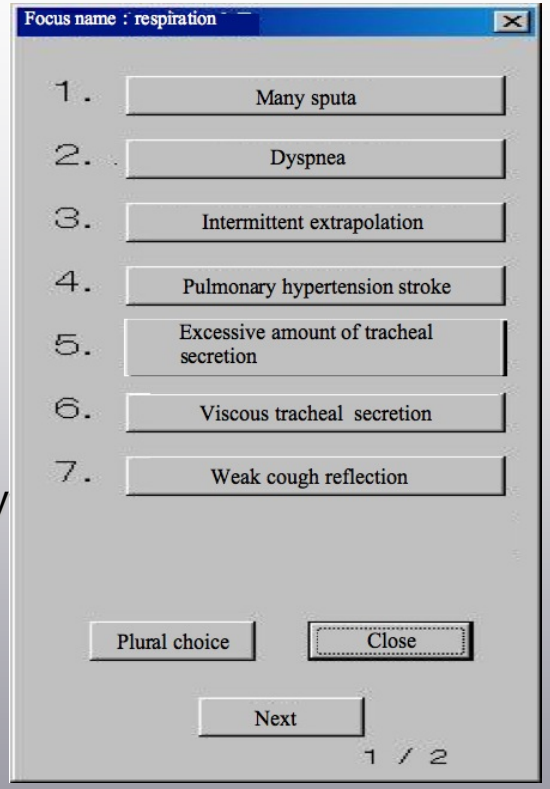
An example of the selection window



hierarchially



- In the input window of focus charting, the selection window of classification is indicated first by saying "focus".
- An item is entered with a voice of the corresponding item with visual observation under the condition of the active window.
- The window of the classification is hierarchially linked with the focus name window.
- The window is indicated by saying “action”.

- Item selection is able to be made by saying not only the name of item (keyword) but also the number of the corresponding item.

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Result 1

Results of the verification experiment

	Mis-input/Voice (selective part)	Mis-input/Voice (Free input part)	Input time/Keyboard (correction time is included)	Input time/Voice (correction time is included)
subject 1	0%	3%	520 sec.	155 sec.
subject 2	0%	1.5%	899 sec.	197 sec.
subject 3	0%	1%	294 sec.	204 sec.
subject 4	0%	0.5%	500 sec.	122 sec.
average→	0%	1.5%	533 sec.	170 sec.

Touch typing

Usability→ keyboard < Voice recognition

by questionnaire investigation

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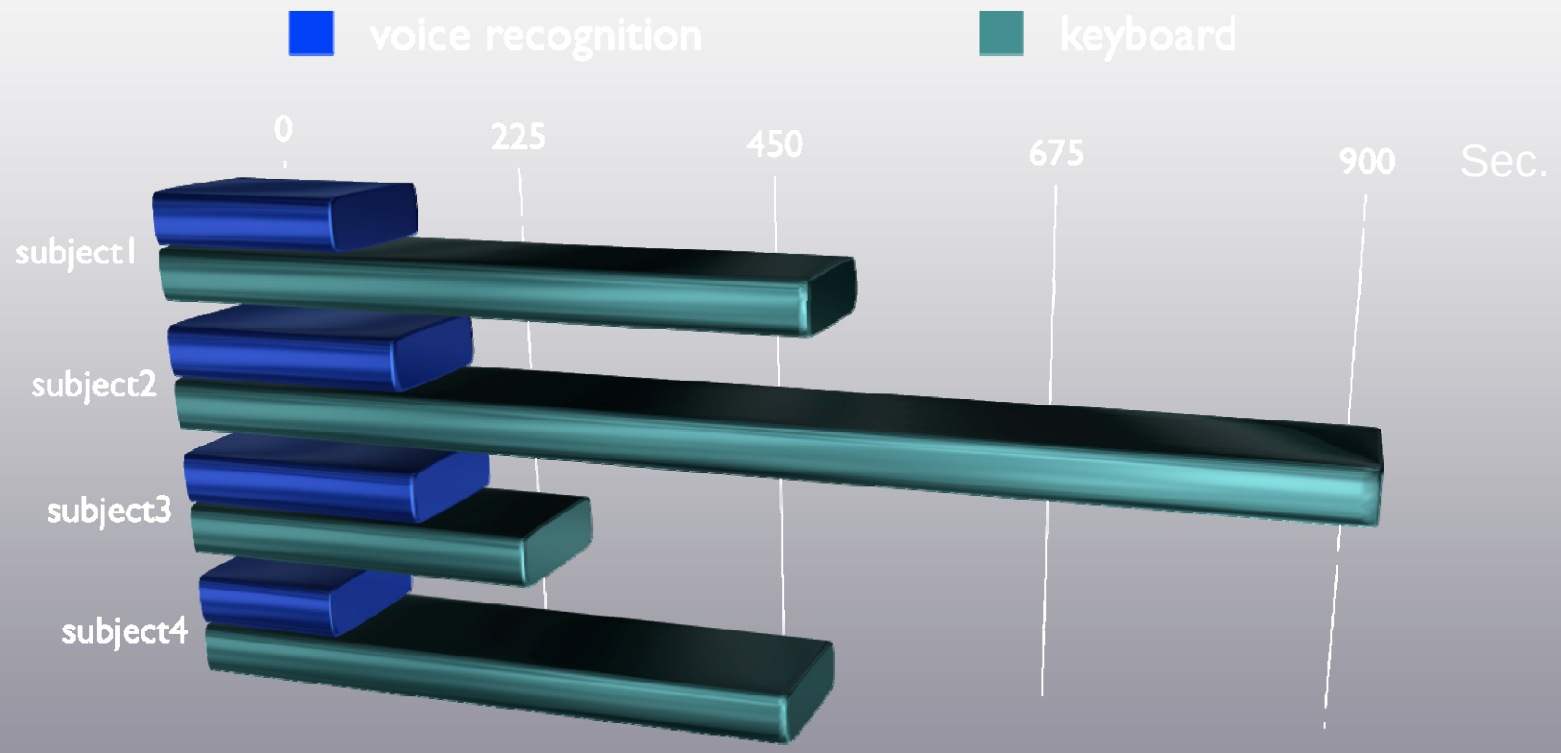
Result 2

Comparison of input time between voice recognition and keyboard operation.



- Subjects are nurse.
- Touch typing is possible by two people.

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Discussion and Conclusion

From the experiment, it was suggested that the voice input using the template made by us is useful for information entry of the system.

- However,
  there is room for improvement of the operationability and exactness of the information entry concerning the template.
- In order to
  promote a voice input tool for an electronic nursing record system, it should be considered to use the tool together with the conventional keyboard input investigating the characteristics of the nursing field.
- Nevertheless,
  this study is thought to be significant, as it is the first trial of applying the voice recognition technology with the template to an electronic nursing record system.

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Reference

- Yukio Kurihara. Actualization circumstance of the effect which is expected to the electronic chart conversion of nursing record. Nursing, 2004. Vol.56 No.14 ; pp. 63-68.(in Japanese)

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