Development of New Job Classification Method in Job Elements Analysis for the Purpose of Human Cost Calculation in Hospitals

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ABSTRACT

We established the job classification method that a classification standard is clear, and can subdivide job by using the raw data of time-and-motion study performed to analyze the medical staff's job elements.
The final target of this study is to optimize job allocation and calculate human cost of medical staffs in hospitals.

Keywords: human cost, calculation, time-and-motion study.

1. INTRODUCTION

In the time-and- motion study to analyze the medical staff's job, we have classified recorded jobs in the free text, using a job code which was created by medical staff's experiences and knowledge beforehand and stored them in a database. It has been required to firstly seize contents of jobs for classification, and then their technical levels and their conducted time duration must be searched out.

In this method, there was an advantage that required shorter time to create the database of job classification from measured raw data, because the code could be selected easily.

However, there were following two weak points in this method.

- Prepared code numbers are allocated only for expected or anticipated jobs, so that every job cannot always be expressed by code number.
- Subdivision of jobs is difficult.

This time, the raw data in free text were once saved in the database as they were, a job code was defined based on the raw collected data, and the job classification is carried out on the basis of job contents and their technical level. We evaluated our new method by comparing with the old job classification.

2. MATERIALS

We used the time study results of medical staff's job elements carried out from 1998 to 2001 in the Second Surgery Ward in Osaka University Hospital.

Jobs in continuous 24 days, for 188 medical staffs were recorded. Job elements beyond 120,000 were collected with high precision in a quadrennial period.

3. METHODS

1. Observers recorded the medical staff's jobs for 24 consecutive hours, and all job elements were expressed in terms of "where", "when", "who", "for whom", and "what", in the free text.
2. The raw data currently written in the free text were stored in a database with free text form as they were.
3. The stored data were classified according to the contents of medical staff's action.
4. The job elements classified according to the content of actions were further classified according to the purpose of action, and we made it possible to subdivide jobs by attaching an auxiliary factor.

Time		Free text	Old code				New code	
Start	Finish		Job category	Job classification	Branched job	Contents of action	Technique	Contents of purpose
9:26:50	9:27:00	A chart is taken from a shelf.	Nursing to support medical practice	Information collection	Preparation · Clearing up	Moving	needless	Information collection
9:27:00	9:32:41	A chart is seen.	Nursing to support medical practice	Information collection	Information collection	Looking	needless	Information collection
9:32:41	9:33:05	A chart is returned to a shelf.	Nursing to support medical practice	Information collection	Preparation · Clearing up	Moving	needless	Information collection
·	·	·	·	·	·	·	·	·
·	·	·	·	·	·	·	·	·
·	·	·	·	·	·	·	·	·
11:44:25	11:45:00	SaO2 monitor is attached.	Nursing to support medical practice	Whole body observation and measurement	Preparation · Clearing up	removing· attaching	needless	measurement
11:45:00	11:45:20	Measurement of SaO2.	Nursing to support medical practice	Whole body observation and measurement	Whole body observation and measurement	measurement	needless	measurement
11:45:20	11:45:25	SaO2 monitor is removed.	Nursing to support medical practice	Whole body observation and measurement	Preparation · Clearing up	removing· attaching	needless	measurement
·	·	·	·	·	·	·	·	·
·	·	·	·	·	·	·	·	·
·	·	·	·	·	·	·	·	·
2:26:57	2:34:25	A chart is filled in.	Other nursing	Documentation	Documentation	Writing	needless	Documentation
2:34:25	2:38:15	Data is inputted into a computer.	Other nursing	Documentation	Documentation	Operating computer	need	Documentation
2:38:15	2:39:46	Data is collected with a computer.	Nursing to support medical practice	Information collection	Information collection	Operating computer	need	Information collection

Table1 Comparison of the old classification code and a new classification code

4. RESULT

A part of table of correspondence where new classification method according to the conventional method is shown in Table 1.

Following are the results we have learnt.

- By means of new classification method according to the contents of job actions, total time of a certain job spent in a day can be clearly expressed now.
- As compared with the former classification method, the new job classification method brought us more precise classification because contents, purpose of job action and level of technique are taken into account.
- The time spent on the job related to necessary skill or technique can be now recorded. So the difference of the medical staff's technical level can be clearly recorded now by comparing the recorded time.

5. CONCLUSION

The medical staff's jobs can be clearly classified by carrying out class separation in terms of contents of job action, purpose of job action, and subdivision of jobs.

The capability or ability which a medical staff must have is also able to be deduced because the amount of jobs and the technical level of jobs were qualitatively and quantitatively taken account. Also it became easier to figure out capability or skill level of medical staff.

Moreover, the grade of a mental burden can also be extracted now by contents and purpose of job actions.

Our new job classification method required for the job elements analysis and calculation of human cost in hospitals was successfully developed.