◈ Original Article ◈

The Research about Role Area of RT in Digital Environment
- Centers on PACS Workplace -

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Abstract

Now a days in our society, occupation boundaries have become blurred, and come into the limelight in the prior occupation or miss about new workplace. Medical area is no exception also, So we face urgent problem about protecting and spreading RT work-sphere simultaneously. This research allow to identify on RT role area of digital environment that is obscure profession-realm specially, and open up a new field hereafter. We examined present RT role area of digital environment in the more than thirty medical facility(general or university hospital) through questionnaire/visit survey from PACS administrator. Survey sentence comprises total 29 sentence over all main quadrisection-(eX. hospital formation & treatment state and PACS team composition & organization and PACS team workplace and PACS team daily workload), We performed comparative analysis in general contents perspectively. further more, divided main 5 section based on upper analysis and then manufactured output in consideration of each medical facility's operation state. There are comparative problem of hospital policy, So we maintained information security of each facility exhaustively. First, we separated a survey output into main 5 section as follows-(eX. PACS server & maintenance manage, Client/interlock manage, PACS data conversion, 3D reconstruction, PACS data im/export)-that received by 35 medical facility. And then manufactured output with comparative analysis about RT role area each section, general IT managing team about medical environment was out of existence that fill up with RT manpower in the surveyed medical facility consequently. What is worse, hospitals that entirely fill up with another worker were 3 place amazingly. Our specific statistic results show, the respondents was 63% that agree with reorganization of formation base on independence team, and supplement of the personnel average -continuous with upper agreement simply-was about 2.64. Further more, if reorganization break out with only RT manpower, quota TO will increase by geometric progression. Protecting and spreading role workplace is much accounted of the our inevitable project surely and more than 95% PACS administrator's have confidence in this proposition unconditionally. Henceforth, look forward to meeting the RT vision of

many-sided multiplayer, based on acquire a specialized IT knowledge actively and open up a new work-field with frontier spirit.

Key Words : PACS, Digital environment, RT, Another work-field, IT knowledge, Spreading

Ⅰ. Introduction

Our own day, role about RT in digital environment has a problem because variety of each medical facility. Usually RT & medical staff are confusing about that is above role issue. For example, not only user in cardiac sonography, and OBGY, PMR, Endocrine ultrasonography, but also suture working, IV, and so on. Almost hospital have a related problem that similar to upper sentence. So, in every job field, party strife in workplace is more important, and competition between medical staff for prior occupation of the market is becoming fierce.[1~2] Especially digital area is no exception to this rule and very serious all the more. In korea medical field, digitalizing project series was started thirteen years ago approximately to medical staff and patient to those who wanted to diagnose for patient disease efficiently. At that time, setup device(PACS server, database, storage, diagnostic monitor, interlock equipment and many types of dicom gateway, etc) were introduced.

Almost the whole university & general hospital were joined in supporting the this stream of times. But digitalizing project was very intricate and difficult. So, even 10 years after setup, people in hospital still confuse management working, because hospital policy does not say who must do the tutoring.[3~5] Therefore research was undertaken to verify the findings of RT role area and PACS team composition in the more than thirty medical facility. Building on the project findings, we know we have to face hard truths and take strong steps for advance the boundaries of occupational field.

Ⅱ. Material and Method

1. Material

In the present study, we used the self-developed questionnaires that composed with twenty-nine questions. It concerns mainly focus on PACS team's 5 section parts as follows-(eX. PACS server & maintenance manage, Client/interlock manage, PACS data conversion, 3D reconstruction, PACS data im/export)(Table 1).[6~8]

2. Method

We sent above questionnaires to each hospital PACS administrator, and receive the data by calling system or internet web mail. 22 questionnaires are collected in Seoul, and 11 questionnaires are collected in Kyeong-Ki do and 2 chart that etc. When administrators are not exist, we requested to most concern person in that PACS system. For example, RT, Computing team member, outsourcing human resource. Maintained information security of each facility exhaustively why it has comparative problem.

Ⅲ. Result

Most of the PACS administrators are disordered because incoherent of hospital policy and another man-power(AN, out-sour cing worker) substitute for our original section. Also, almost PACS managers agree to extend about RT work domain absolutely. First, 4 important sections were divided. Broad-brush paragraph is described below(Fig. 1).

Table 1. questionnaires of workplace & intention in PACS team

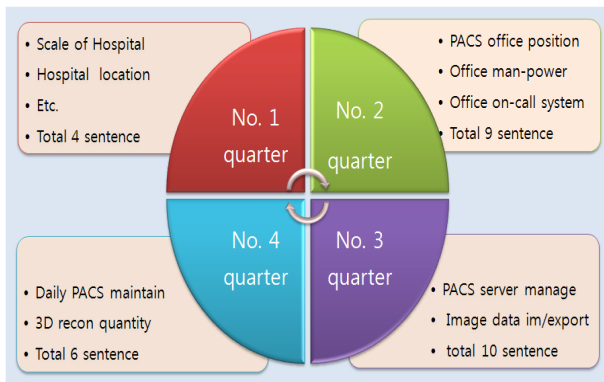| Hospital Comsition	A hospital
hopspital location	Seoul
Sickbed scale	Over 700 bed
Workforce	Over 1000 people
Daily outpatient	Over 1000 people
PACS team organization	
PACS team belong to	Part of radiology
Manpower by occupation	RT + office clerk
PACS team reside to	3
PACS team task ratio for each person	PACS purchase/maintain/management - 0 people client PC check, management & interlock device - 1 people PACS data change - 1 people 3D conversion - 0 people management of CD im/export - 1people
Assent of expand operations	No
predict To when expand operations	3
Assent of PACS team independence	Yes
Work type of weekday	Normal
Emergency response procedures of PACS system	Emergency response
Workplace of PACS team	
Purchase/maintain/management of PACS, Self execution of the budget	Jurisdiction of computing team
Total system outsourcing management	Jurisdiction of computing team
Data information change	Jurisdiction of PACS team
Dlient pc PACS program install in hospital	Jurisdiction of PACS team
Check & processing of error at client PC	Jurisdiction of PACS team
3D conversion	Jurisdiction of radiology
Management of interlock device	Jurisdiction of PACS team
Date export of information	Jurisdiction of PACS team
Date import of information	Jurisdiction of PACS team
Charge free or charge of data import	Non implementation
Daily workload of PACS team	
Number of date export	Over 40 cases
Number of date import	Over 30 cases
3D conversion	Not work in PACS team
Data information change	Over 15 cases
Check & processing of error at client PC	Over 5 cases
Management of interlock device	Over 5 cases

Fig. 1. Dividing section from received data
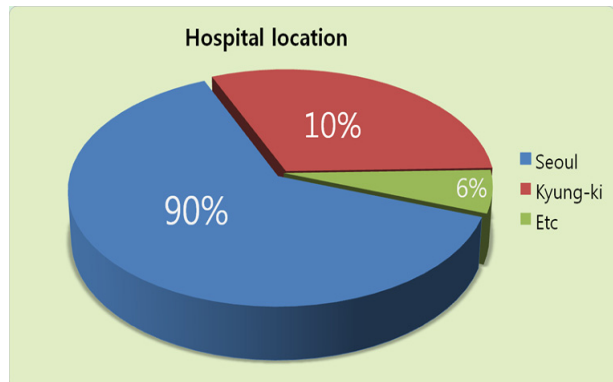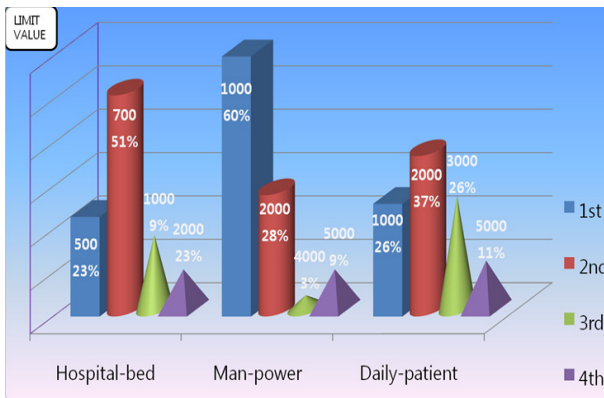

Fig. 2. Questionnaires of No. 1 section
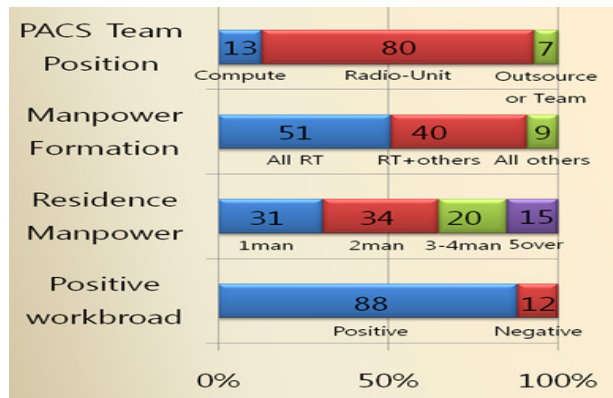

Fig. 3. questionnaires of No. 1 section

Fig. 4. questionnaires of No. 2 section

Quartering section

NO. 1 —〉 medical facility structure

NO. 2 —〉 PACS office organization

NO. 3 —〉 PACS office workplace

NO. 4 —〉 PACS office daily workload

This diagram is hospital location. It is composed of about 90% in Seoul hospital, and 10% Kyung-Ki-do hospital. and the rest is 6%. that include Busan, Incheon, and so on(Fig. 2).

We are checking general situation of each medical facility. In hospital bed, largest number is more than 700. that 51% And 500, 1000, 2000 are running after. In man-power corner, over a 1000 is most common. Last corner is daily patient that display regular percentage comparatively[11]. From now on, we look into third and fourth paragraph those PACS office organization(Fig. 3).

First, in PACS team position, radiology depart- ment unit form is a great part of percentage. In man-power formation, until now other people substitute. But we will cover all area in digital environment one day. Residence man-power corner is exhibited similar percentage, 1 and 2 and 3 or 4 and 5 man. Positive workbroad and Expecting man-power, positive of self-help parts are most important in our thesis. As you can see, almost the whole responder consent with the positive workbroad and self-help team. Which means requiring additional people about 2.64 man. I think an amount of value. In day work, normal is most common and on call system is saw(Fig. 4, 5).

Below fifth paragraph is office workplace. Unfortunately, most important businesses in the PACS team that general PACS manage, for
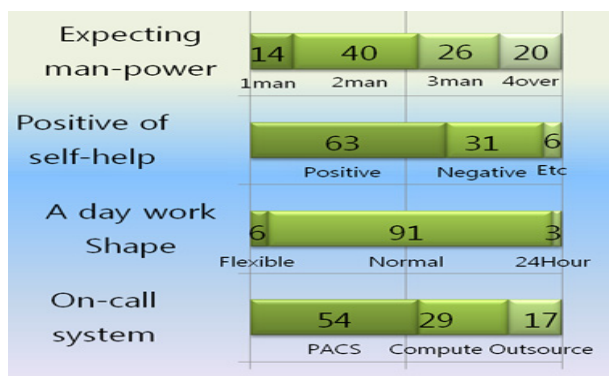
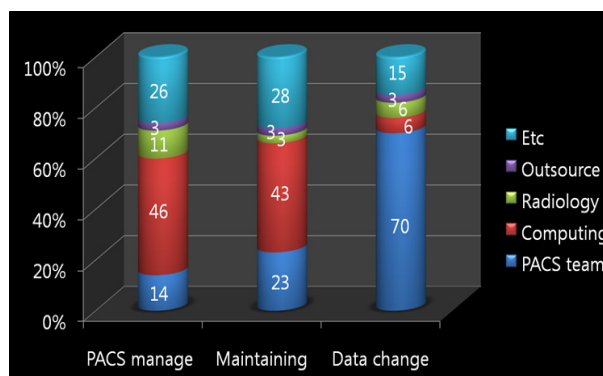Fig. 5. questionnaires of No. 2 section
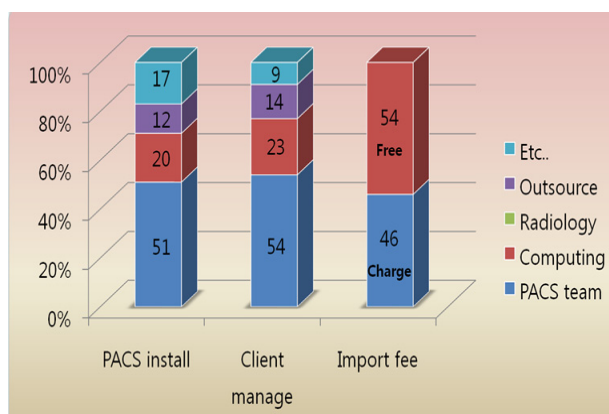

Fig. 6. questionnaires of No. 3 section
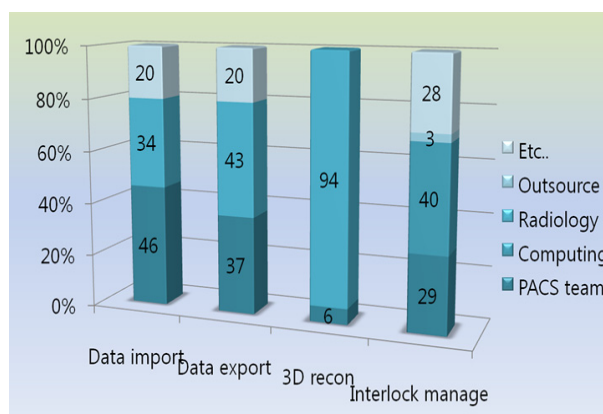

Fig. 7. questionnaires of No. 3 section

Fig. 8. questionnaires of No. 3 section

example purchase, manage, contract, execution of the budget about PACS and manage of the maintaining and Outsourcing are substituted by computing department. data change is common work on PACS team(Fig. 6).

Next paragraph, PACS program install, and Client PC manage are belonged to PACS team below 50%. Interestingly, free or charge in the fee of import data's are in substantial agreement with each other(Fig. 7).

At this point in time, three reconstruction work is under the jurisdiction of radiology mainly. But from this time forward, RT will take over the this portion of the IT work. Except that in the same graph as below. As of yet, PACS team is not exceptional principal agent about below IT part (Fig. 8).

Last section is concerned with PACS team workload. Data import & export quantities look similar to the most facility but 3-D reconstruction is not yet common task that managed by another manpower(ex. resident, radiology, normal office worker, transcriber). The number of daily cases about data information change and PACS program management are similar to above ratio. Finally, interlocking manage is rare duty because that implemented when purchasing the interlocking device, or network error, error of medical information device itself(Fig. 9, 10).

Ⅳ. Discussion

We are determining the criteria for classification of main area 5 partition for easy understanding.
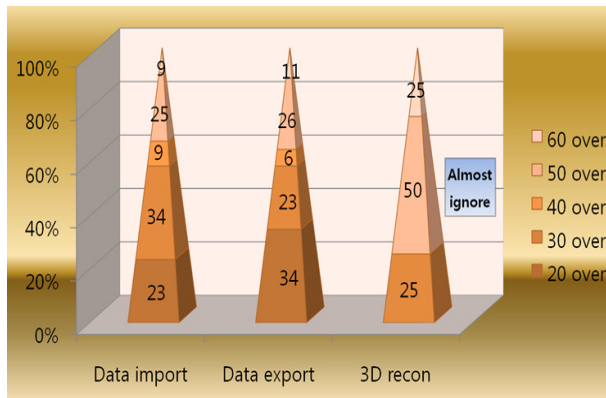
Fig. 9. questionnaires of No. 4 section
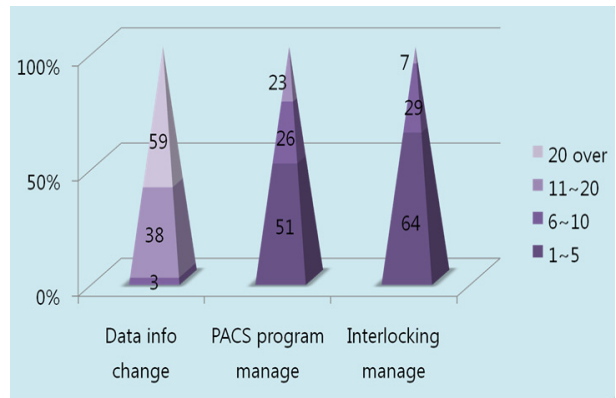

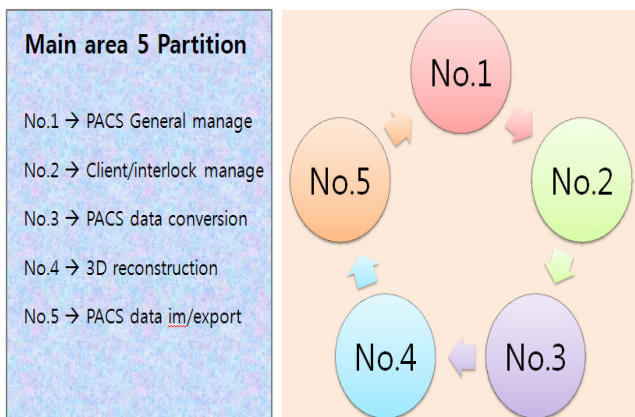Fig. 10. questionnaires of No. 4 section
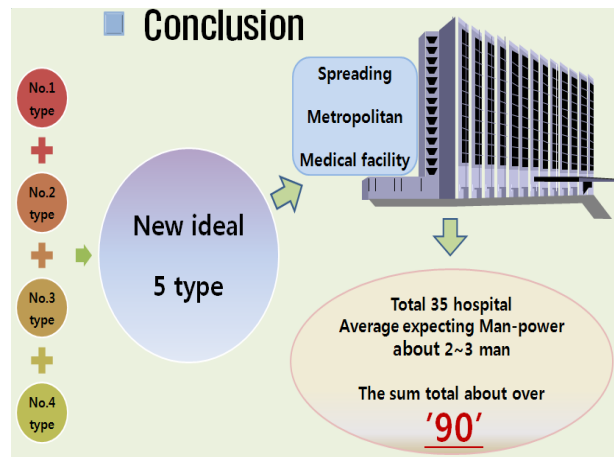

Fig. 11. Dividing main work area

Fig. 12. Diagram for work type of total statistics
in 35 medical facility

The 5 part are as follows(Fig. 11).

Main area is distributed on the basis of received questionnaires about medical facility and think that main important task of the IT administration and another hospital IT practicians are agree with our focus. and then, defining 4 types of manage area those built to the upper standards and expressed Ben-diagram as follows.[9~13] Unfortunately, special type that composed with entirely belong under another worker is reaching 9%(Fig. 12).

If we can make below ideal change through fusion of all type area, maybe medical facility could offer huge manpower. Upper statistics and ratio are limited to metropolitan area, so if
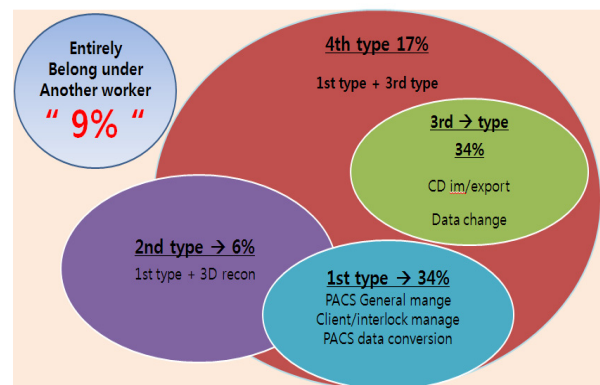

Fig. 13. Conclusion of ideal task formation

furthermore place where the whole country is checked our survey, numerical value was increasing exponentially(Fig. 13).

Ⅴ. Conclusion

This paper's main theme is current role area about Radiological Technologist in Digital environment. As you know, Radiological Technologist's job places were being threatened by manifold reason. but, we never needs to be afraid of it. in other ways, this circumstances can become opportunity of new gain job area. in the future, medical interface based on IT will more spread rapidly. So, IT medical hardware and soft ware that medical equipment and attachment, or OCS, EMR, and EHR and so on will be contoroled by RT because RT has optimum acquaintance why we receive an education of medical part that include anatomy, physiology, pathology and radiology etc and engineering part that contain electronics, mechanical engineering, chemistry, metrology etc in the university. therefore RT is only people learning interactive knowledge in medical jop place. we are have massive capability. To do this, you must have confidence. Via a this research, will hope to diversify on the RT work district and enterprising potentiality. If reorganization break out with only RT manpower, quota TO will increase by geometric progression. Arouse all RT's attention to the calamity of violation in our jop place. The solutions seem to clear in RT role area and branch out of another work field. Timorous of change is our biggest enemy.

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