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              : 1997
                                  42
                                                71
                                                                                                         , 26
        ___:
, 205
가
                                                                           , 100
                             가
                                            19,773
                                                                               42
                                                                                           89%
                                                                                                          6 MeV
                             95%
                                                                                        가
                                                                 5%
                                                    , 83%
                                                                                가
                                            91%
                가
                                     36%
                                                               가
                                                                             38 %
                                            263 ,
            348
                                                                                              171 ,
                                                3
                81
                                                                        가
                                     가
                                                                                   (loading)
                                              가
                                                               가
                                                                                                                       part
         time
                                                                                                        (standardization)
                                                                                                                    1974
                                                                                                                                PCS
                                                                                    5
                                                                                                      10 14)
                                   (medical physicist),
                                                                                                                          (
       가
                                                                                                                         (seminoma),
      (Quality Assurance, QA)
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                                                                                                   (national average)
                                                                                                           (guideline)9)
                             (QA protocol)
                                                                               17,18)
                                                                                            1991
                                                                                                      Japanese Society for Therapeutic
                 Patterns of Care Study (PCS)
PCS
                                                                     Radiology & Oncology (JASTRO)
                                                                     1990
                                                                                                                        가
                                                .1)
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- 1 -

1999;17(2):172 178

PCS7	.21)		1997 1 가 .	1 12 31
1991 EC committee network ²¹⁾	'Quality Assurance(QA)	Excel .		
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가 가			가	
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_1 _1				
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24 31)		1. ,		
1997	PCS		가	, ,
. PCS (structure)		42 , 552 ,	1,542 가	(Table 1).
가		プト 1,095,000 , プト プト . , 560,262 . microtron X-ray	229,000 ,	176,000 19,773 , 79,086 7} (linac), betatron,
가 42		, 61 , 630	5 , 2466	Co-60

Table 1. Equipment Pattern and Number of Patients in the Korea, Japan and USA

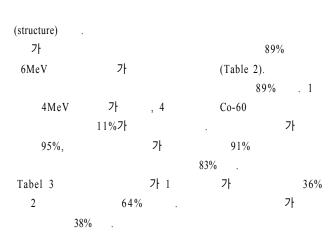
	Korea (1997)	Japan (1998) †	USA (1994)
Population	45,991,000 [*]	126,420,000	271,600,000
Facility	42	552	1542
Population per facility	1,095,000	229,000	176,000
No. of New Pt treated by RT a year	19,773	79,086	560,262
New Pt/population (%)	0.043	0.063	0.21
Freatment machine (external)	71	756	2,744
Linac/betatron/microtron	61	636	2,466
Cobalt-60 (Tele)	10	120	314
RT Oncologist	100	486	2,777
Fechnologist Fechnologist	205	952	7,167
Patients per facility	471	143	373
Patients per machine (external)	278	104	205
Patients per oncologist	198	162	211
Patients per technologist	96	83	65

^{98 4}

[†] tentative data

	1	0 , 120	, 314			
	가	,	,	100	, 486 , 2,	777
		205	, 952 , 7,	167		
			471 ,	143 ,	373	
		가 기	ነ .			
278	,	104 ,	2 05		가	
		가				198 ,
162	,	211	;	가		가
			g	96 ,	83 ,	65
	가					

2.



3. (Loading)

Table 4

Table 2. Comparison of Facility Capability between Korea and $\ensuremath{\mathsf{USA}}$

Equipments	Facility (%) of Korea (1997)	Facility (%) of USA (1994)
Highest Energy Treatment		
Machine (MeV)		
Linear Accelerator 10 23	60	64
Linear Accelerator 6 <10	29	23
Linear Accelerator 4 < 6	2	8
Cobalt Unit	10	5
Simulator		
Yes	95	95
No	5	5
Treatment Planning		
Yes	91	95
No	9	5
QA program in use		
Yes	83	96
No	17	4

7 :

201 30	0		8,3	301 400	
8	가		100		4
	1,200			4 .	
348				(Table 5)	201
300				12 , 101	200
		10	100		4 ,
501	600			1 , 601	700
		1		2	63

Table 3. Comparision of Facility Size between Korea and USA

	Facility (%) of Korea (1997)	Facility (%) of USA (1994)
No. of Radiation oncologists		
1	36	29
>1	64	71
No. Medical Physicists		
<1	38	35
1 2	62	65

Table 4. Distribution of Patient Load by Facility in Korea and USA

Median (Korea): 348 patients/year, *Median category, †Academic+hospital based

Table 5. Distribution of Patient Load per Machine in Korea and USA

New patients/Machines	Facility (%) of Korea (1997)	Facility (%) of USA (1994)
100	10	10,
101 200	24	43*
201 300	29*	33
301 400	17	11
401 500	12	3.0
501 600	2.0	1.1
601 700	2.0	1.0

Median (Korea): 263 new patients/machines,

*Median category

Table 6. Distribution of Patient Load per Radiation Oncologist in Korea and USA

New Patients/	Facility (%) of	Facility (%) of
Radiation Oncologists	Korea (1997)	USA (1994)
100 101 200 201 300 301 400 401 500 >500	12 46* 29 10 2	13 42* 26 12 4.6 3.9

Median (korea): 171 new patients/radiation oncologists, *Median category,

Table 7. Distribution of Patient Load per Techonlogist in Korea and USA

New Patients/Technologists	Facility (%) of Korea (1997)	Facility (%) of USA (1994)
50 51 100 101 150 151 200 201 250 251 300 >300	12 63* 20 2.0 0 0	15 66* 16 1.8 0.91 0.46 0.91

Median (Korea): 81 patients/technologists, *Median category

101 200 46% 가 , 201 300 29% . 400 1 171 (Table 6). 51 100 63% 가 (Table 6). 300 1 81

Table 8. Distribution of Technologist per Machine in Korea and $\ensuremath{\mathsf{USA}}$

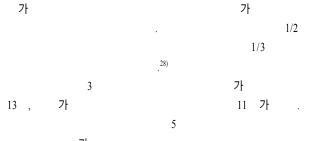
Technologists/Machine	Facility (%) of Korea (1997)	Facility (%) of USA (1994)
1.0	10	9.0
1.1 2.0	17	29
2.1 3.0	29*	37*
3.1 4.0	34	17
4.1 5.0	7.0	5.9
>5.0	0	2.9

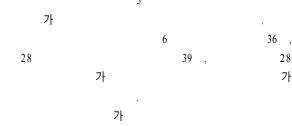
Median(Korea): 3.0 technologists /machines,

*Median category

3 가 34% 가 4 3 (Table 8).

1990 1997 1994 가





가 가 가 1994

7 :

가 가

7 83% 96% part time .

· 가

가 2 가 가 가 3

7}
38%
35%
Part time
7}
1,200
10%
1.7%
100
10%
5.5%
7}

100 263 7†
(loading) .

100
200
500
4%

가 . 가 . . 가

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The Stucture of Korean Radiation Oncology in 1997

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<u>Purpose</u>: To measure the basic structural characteristics of radiation oncology facilities in Korea during 1997 and to compare personnel, equipments and patient loads between Korea and developed countries.

Method and Materials: Mail serveys were conducted in 1998 and data on treatment machines, personnel and performed new patients were collected. Responses were obtained from the 100 percent of facilities. The consensus data of the whole contry were summarized using Microsoft Excel program.

Results: In Korea during 1997, 42 facilities delivered megavoltage radiation theraphy with 71 treatment machines, 100 radiation oncologists, 26 medical physicist, 205 technologists and 19,773 new patients. Eighty nine percent of facilities in Korea had linear accelators at least 6 MeV maxium photon energy. Ninety five percent of facilities had simulators while five percent of facilities had no simulator. Ninety one percent of facilities had computer planning systems and eighty three percent of facilities reported that they had a written quality assurace program. Thirty six percent of facilities had only one radiation oncologist and thirty eight percent of facilities had no medical physicists. The median of the distribution of annual patients load of a facility, patients load per a machine, patients load per a radiation oncologist, patients load per a therapist and therapists per a machine in Korea were 348 patients per a year, 263 patients per a machine, 171 patients per a radiation oncologis, 81 patients per a therapist, and 3 therapists per a machine respectively.

<u>Conclusion</u>: The whole scale of the radiation oncology departments in Korea was smaller than Japan and USA in population ratio regard. In case of hardware level like linear accelerators, simulators and computer planning systems, there was no big diffrences bewteen Korea and USA. The patients loads of radiation oncologists and therapists had no significient differences as compared with USA. However, it was desirable to consider the part time system in USA because there were a lot of hospitals which did not employ medical physicists.

Key Words: Radiation Therapy, Statistics, PCS, Quality assurance structure