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Material Related with the Report of Mr. Katsuo Nishiyama of
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ERODED BODY AND MIND

~~Guidelines to Regulate Work on -
VDT (Visual Display Terminals)~~

**Summary of Final (Fourth) Report on
Research of VDT Work and Health Affected**

SOHYO Micro-Computer Research Committee
May 1985

Guidelines to Regulate Work on VDT (Visual Display Terminals),

SOHYO, May 1985

C-O-N-T-E-N-T-S

	Page
Preface	for 1
Outline of Research Work	3
Chapter I - Actual Situation of VDT Work	27
Chapter II - Working Environment and Layout	55
Chapter III - Fatigue Accumulated and Health Eroded	83
Chapter IV - VDT Work and Mental Stress	120
Chapter V - VDT Work with Special Reference to Working Women	132
Chapter VI - What Are Affecting Workers at Home and Workstations (Desire from VDT Workers)	171
Chapter VII - Real Image of VDT Workers	198
Chapter VIII - Voice of VDT Workers	224
Chapter IX - Summary of the Report and Tasks for Trade Unions	243
Appendix: Questionnaire on VDT Workers' Health and Safety	

Stress", Chapter V "VDT Work with Special Reference to Women Workers", Chapter VII "Real Damage of VDT Workers", Chapter VIII "Voice of VDT Workers", and Chapter IX "Summary of the Report and Tasks for Trade Unions", as well as all of the charts and tables attached to these respective Chapters.

The SOHYO is scheduled to organize the special activities to negotiate the collective agreements on VDT Work Regulations based upon the Guidelines at the industry and company levels in future and also to make representations on this issue to the government and local municipalities with a view to strong and urgent enforcement of the social regulations and obligations regarding the subject matter. Wishing a great development in personnel exchange programs and solidarity actions among the workers of various countries by virtue of discussion and use of this Report.

The Committee has been committed to protection of safety and health for the workers assigned to computer work and computer-aided jobs, with its pivotal task to formulate the "Guidelines to regulate VDT Work" to safeguard the working and living conditions for them in respect to their safety and health in particular. The "Guidelines to regulate VDT Work" and "Final (Fourth) Report on Research of VDT Work and Health Affected" as summarized in the present report were presented to the symposium opened on 18 May 1983, with participation of a good number of specialists, namely the representatives from the Ministry of Labor, medical sociologists, research specialists including women and health fields, and others. This edition in English is intended for the readers of the world and features of the VDT workers. The English edition is also carrying with itself not the summary but the whole of the original report in respect to the Chapter IV "VDT Work and Mental

OUTLINE OF RESEARCH WORK

1. Objective of Research Work

a. The technological innovation, called now the "Microelectronics (ME) Revolution", has been widely introduced into various industries and companies, whether they are large or small, leading to a great change in respect to working behaviours, and modalities, living modes and social activities.

In evaluation of these developments, only the "bright" aspect of them is most highlighted, stating that one of the features of the ME-aided technologies, or "light, thin, small and short" and "labor-saving and energy-saving" has brought about productivity gains, making enormous contribution to the economic growth of Japan in view of the ME position as the most soaring industry.

b. For the SOHYO, we have tried to look into not the "bright" side of the movement fashionably advertised but the "dark" side where the working people have been victimized, because the reality already tells us that the ME-aided machine and equipment, which are adopted in almost all fields, sometimes as a panacea, could impose serious impacts upon employment, only due to the purposes and methods of their utilization and the environment where they are used, also that they could endanger the life and health of the workers who handle them in the production processes, and that there is a fear for them to translate themselves into the "brutal weapon" which we have never seen.

The diffusion and expansion of ME-aided devices are far quicker than our expectation, and thus it seems almost inevitable that more arbitrarily they spread more negative impacts would grow upon the workers health.

c. We published two years ago the Second Report, "Computer Work

and Safety and Health", covering the VDT Work, that pointed out the occupational diseases taking place which were "foreign" to the traditional ones.

This time we are raising the question, among others, concerning the VDT Work involved in the ME-based technological innovation, mainly because we consider that "the VDT Work is the most common and general work modality created by the ME-based technological innovation, and the safety and health measures to such work are so common among any industry and company", that we are urged to establish our own counter-measures to deal with it, and also because we realize it necessary to "prove" any "foreign" occupational disease by a living fact.

This "VDT Work and Research on Health Affected" is launched to identify and grasp the real complaints of workers when they are in fact seriously involved in such situations that "I feel something wrong with my eyes", "I have a bad mental fatigue and stress now", "my physiological condition (menstruation) is disordered", and "Abnormality happened with my child delivery".

It is noted that the Ministry of Labor issued the "Guidelines for VDT Work and Control of Working Safety and Health" in February 1984, and in complying with it many companies have since then formulated and applied their VDT Work Standards at their workplaces.

Nevertheless the Guidelines by the Ministry of Labor is considered not based on the fact-finding inspection, leaving much room for improvements, and thus more sophisticated

research is now developed by the Industrial Medical College and other institutions under the direction of the Ministry of Labor, so that a renewed guidelines could be revealed during this year 1985.

On the other hand, our research is considered the pioneering one in view of its extensive fact-finding inspections and its large scale. Since we published our "Interim Report"

in July 1984, we saw the Report spread its influence, causing serious attentions, among many circles (including the workers and their trade unions, of course, and specialists, business and management associations as well), and our Final Report has been awarded by all the concerned enthusiastically.

In response to their expectations, we are now publishing the "SOHYO Guidelines To Regulate VDT Work", well based on the fact-finding research which is one of the initial objectives for this research work. Even this Guidelines is not enough to cover all the necessary and complete provisions and procedures to solve the diverse problems encountered during the research. Because, unless the involved workers' voices are fully integrated and represented to cover the comprehensive and overall aspects of working conditions (including work processes), labor administration, working environment, safety and health including health supervision related to the VDT Work in the background. The guidelines would become isolated and specific, and it could not contribute to the essential settlement of the issues involved.

This research indicates all the points such as causes, symptoms, consequences and others to be examined and discussed which are to affect the workers' health on VDT jobs.

However, we wish much discussion to be deeply developed to protect the "human work, life and health" at the respective and all levels not only by the workers engaged in the VDT Work directly and the trade unions but also by the industries, companies and the community as a whole.

2. Research Items

The research items are classified roughly as follows with a view to looking into various conditions that would cause mental and physical fatigue upon the workers concerned:

the biggest in Japan and also unprecedented in the world, so that it is believed the research results may fully cover the main problems at issue over the factual situation of VDT work and health of the concerned workers at present.

c. As regards the "Free Description" items in the Questionnaire, the thorough check was done one by one who filled the columns, and 220 persons were selected among the total for further fact-finding-interview on an individual basis. For preparation of the Questionnaire on an individual worker, opinions from the specialists were invited. Interviews with and hearings from 120 persons were conducted during the months from November to February, with cooperation of unions concerned. Through this Report, we shall express our sincere thanks to the individual workers who replied to the hearing and also we are very grateful to the organizations that positively cooperated with our research on the spot, namely the Association to Think of Computers and Women Labor, Rationalization Through Computer Research Institute, Computer Work Institute, Bank Workers Study Association, and Japan Women Congress.

The findings of these hearings were classified into specific items, covering working and living conditions, complaints and grievances, which were further summarized in the form of records to illustrate specific facts to the maximum extent.

4. Replies Collected

a. The total collection stands at 13,143 as shown by Table No. 1, including a large collection each from the SOHYO affiliates, with 1,205 from Japan Federation of National Public Service Employees' Unions (Kokko-Roren), 839 from All Japan Prefectural and Municipal Workers' Union (Jichiro), 785 from All-Japan Express Workers' Union (Zennittsu), 700 from All-Japan Shipping Labor Union (Zenkairen), and other

industry-wide unions outside the SOHYO which keep a large number of VDT workers, namely All Trading and Commercial Workers' Union (Zenshosa) with 921, Computer Workers Union (Densanro) with 309, and few others such as Federation of Private Broadcasting Workers' Unions (Minpo-Roren), Federation of Tourism Industry Workers' Unions (Kanko-Roren), Federation of Cooperatives Workers' Unions (Seikyo-Roren), Federation of Publication Industry Workers' Unions (Shuppan-Roren). On the other, such institutes specialized in study of computer-related labor issues extended their positive cooperation to the project, as "Association to Think of Computers and Women Labor", "Rationalization Through Computers Research Institute", and "Computer Work Institute" (Table No. 1)

5. Analysis

These data of the collected replies were analyzed not only by the SOHYO Micro-Computer Study Committee but also by the engineering specialists, mental doctors, labor hygienists and other experts. Their advices were also included in the conclusion summarized under direction and responsibility of the SOHYO.

6. Cross Reference of Surveyed Items (Table No. 2)

Triple cross references are made thoroughly to examine the relations among the eyes conditions, health conditions and working conditions, and also working environment, as shown by Table No. 2. (The Interim Report covered the double cross references.) Emphasis is put inter alia on what are the relations between "wish to quite working" and the sexes, "continuous working hours" and "maximum working hours", "maximum working hours" and "existence of norma", in respect to their

effects upon the eyes and health conditions of the incumbent workers. Also how are the "abnormal conditions during pregnancy period", and "abnormal parturition" related with the working conditions and environment? This is also highlighted in the Triple Cross Examination.

7. Survey Report

a. Profiles

(1) Characteristics

(a) The overwhelming majority of VDT workers are young, and less the number higher the ages of the workers.

(b) The form of employment for VDT workers includes dispatch to the job on contract (lent-a-worker system) and work at the worker's own home, representing the recent change of employment pattern and features of information/data processing industry.

(c) It is found 35% of the total on the average under survey wished once to quit working on VDT, with women at 43% and men at 30%, representing a negative attitude to the VDT work.

(d) The period of use of the VDT equipment is rather short, or two years and seven months, running in parallel with the development of micro-electronics (ME) devices, with close implications to the workers due to the spread of VDT irrespective of job classifications and ages.

(2) Chart No. 1, showing the number of VDT workers by sex and age, draws the picture that men account for 7,368,

or a share of 60.8%, and women 4,489 (37.0%). Among men, the largest is the age group of 25 to 29 years old, standing at 1,808 (24.5%), the age group of 30 - 34 (24.0%), 35 - 39 (17.0%), and 20 - 24 (13.6%) in the order. Most among those of 20 - 39 ages, and less the number higher the ages of the workers on VDT jobs. Among women, the age group of 20 - 24 account, for 1,872 (41.7%), a half of this figure is for the age group of 25 - 29, and above these ages the number goes down. The comparison between men and women tells us more women than men for the ages of 19 - 24, more men than women for the ages above 25. To sum up, the overwhelming majority of VDT workers is occupied by the younger and the minority by the middle aged and elderly people.

(3) Chart No. 2, showing VDT workers by "employment status", lists the regular/permanent workers at the top, occupying the overwhelming majority at 90%, for all the ages, two sexes, and all types of work; the second is the lent-a-worker (called out to the jobs on contract) group, numbering 214 (1.8%) (150 men and 64 women), and the working-at-home group 12 (8 men and 4 women), thus varied in accordance with the employment status. A majority of the lent-a-worker group is composed of the data entry workers (84 persons) and the dialogue type workers (93). The working-at-home group does the jobs similar to those for the lent-a-worker group. On the other, 169 female part-timers use the VDT equipment, with perspective to advance into all forms of employment.

(4) Working Time for VDT Workers, Chart No. 3, shows the day workers membering 5,743 (77.9%) and shift workers 1,533 (20.8%). The older workers occupy the higher share in the shift group. Women working the day time number 3,993 (89.0%), more than men in respect to their day work ratio, and women working the shifts number 449 (9.9%),

less than men in respect to their shift work ratio. The situation found of 7 women engaged in the regular night duty is rather difficult to be understood.

By type of work, both men and women are more engaged in data entry jobs during their VDT work on shift (36.9% and 52.9% respectively). The regular night duty done by the four women applies to the monitoring work.

(5) Chart No. 4, Industries/Sectors covered by VDT workers, shows 3,160 persons (26.1%) engaged in the public sector, 1,959 (16.2%) in transport industry, 1,314 (10.8%) in manufacturing industry, 1,104 (9.1%) in service industry, 888 (7.3%) in information and communication industry, occupying the majority of this category, irrespective of the ages, sexes and job types at the workers concerned.

(6) Chart No. 5, Period of VDT Use by Workers, lists the biggest group of 2,281 persons (18.8%) whose have spent less than 1.5 years since they started working on VDT devices, those with experience of less than 2.5 years (13.2%), less than 0.5 year (11.1%) and less than 1 year (11.0%) in the order. The total's average is 31.6 months (2 years and 7 months). The similar trend can be seen in terms of sexes, and ages. It is to be noted that men and women with their experiences of less than 7 years occupy rather a high percentage of 9.5% and 6.9% respectively. By type of work, data entry, dialogue, data retrieval, word processing and monitoring tasks are done by the greatest number of workers with experience of less than 1.5 years, and then by others with less than 2.5 years, 1 year and 0.5 year respectively in the order, who are concentrated in these jobs. Designing/drawing (CAD) is done by those with less than 2.5 years' experience at large, and then others with less than 1 year and 2 years respectively. Many of those with less than 7 years' experience are engaged in dialogue task (12.5%) and monitoring task (13.1%).

(7) Chart No. 6, by type of work, shows 5,757 persons (47.5%), or near a half of the total on the average, are engaged in "data entry", 2,433 (20.1%) in "dialogue", 1,647 (13.6%) in "data retrieval", and fewer percentages in "monitoring" and "designing/drawing (CAD)" tasks. By sex, it is characterized that both men and women in the data entry jobs occupy the most, with women at 58%, well exceeding the half. More men than women are assigned to the "dialogue" task (27.4% for men, 8.2% for women), and more women than men in word processing task (10.1% for men and 16% for women). By age, the data entry task accounts for the largest, and then the dialogue and data retrieval tasks for all ages.

VDT Devices covered by this Survey are all the equipment which have the display units identical with the screens of the TV sets, including Visual Display Terminals, or the computer-aided systems for data input and output, word processors, personal computers, office computers, CAD terminals for designing/drawing, cash-register equipped with display units, and monitoring VDTs.

Table No. 1

Number of Replies to Questionnaire Collected

Trade Unions/ Other Organizations	No. of Replies Collected
SHITETSU-SOREN (General Federation of Private Railway Workers' Unions)	614
ZENKOKU-KINZOKU (National Trade Union of Metal & Engineering Workers)	449
GOKA-ROREN (Japanese Federation of Synthetic Chemistry Workers' Unions)	633
ZEN-NITTSU (All-Japan Express Workers' Union)	785
NIHON-IROKYO (Japan Council of Medical Workers' Unions)	474
SHIMBUN-ROREN (Japan Federation of Press Workers' Unions)	565
SEIROKYO (Labour Council of Governmental Special corporations)	364
NIPPORO (Japan Broadcasting Workers' Union)	198
HITETSU KINZOKU ROREN (Japanese Metal Mine Workers' Union)	155
ZENIN-SOREN (National Federation of Printing and Publication Industry Workers' Unions)	39
ZENZOSSEN-KIKAI (All Japan Shipbuilding and Engineering Union "SEU")	4
ZENKAIREN (All-Japan Shipping Labour Union)	700
HOTEL-ROREN (All-Japan Federation of Hotel Workers' Unions)	549
DENTSU-ROREN (Federation of Telecommunications, Electronic Information and Allied Workers)	532
TABACCO-KYOTO (Joint Struggle Organization of Tobacco Workers' Union)	161
KOKURO (National Railway Workers' Union)	692
ZENTEI (Japan Postal Workers' Union)	74
ZEN-INSATSU (All Printing Agency Workers' Union)	49
JICHIRO (All-Japan Prefectural and Municipal Workers' Union)	839
ZENSUIDO (All-Japan Water Supply Workers' Union)	104
KOKKO-ROREN (Japan Federation of National Public Service Employees' Unions)	205

Table 2
Cross Reference Table for Data Analysis

Trade Unions/ Other Organizations	No. of Replies Collected
ZEN-NORIN (All Agriculture & Forestry Ministry's Workers' Union)	234
ZEN-KAIHATSU (Hokkaido Development Agency Employees' Union)	84
KANAGAWA-KENPYO (Kanagawa Prefectural Trade Union Council)	120
MINPO-ROREN (Federation of Private Broadcasting Workers' Union)	101
SHUPPAN-ROREN (Federation of Publication Workers' Union)	75
DENSAN-ROREN (Computer Workers' Union)	309
SEIKYO-ROREN (Federation of Cooperatives Workers' Union)	192
ZEN-SHOSHA (All Trading & Commercial Workers' Union)	921
KANKO-ROREN (Tourism Industry Workers' Union)	168
Association to Think of Computer & Women Labor	619
Rationalization Through Computer Study Association	64
Computer Work Study Institute	48
Non-VDT Groups	1022
Unknown	1

Table 2

Cross Reference Table for Data Analysis

REF. NO.	Q. NO.												Q. NO.											
	001	002	003	004	005	006	007	008	009	010	011	012	013	014	015	016	017	018	019	020	021	022	023	024
REMARKS	Experience Period Job Type Jobs Done By Almost Everyone? VDT Used By One Or Jointly? VDT Used By How Many Workers? How Many Hours On VDT Operation? Continuous Operation Hours Per Annual Per Month Per Week Per Day For Annual Peak, What Percentage Above the Normal? Peak Period Of VDT Operation: Maximum Continuous Working Time? Existence Of Recess Time Recess Time Screen Watching Time Existence Of Norm Desired To Quit Working? Existence Of Jobs Outside VDT Work Contents Of Such Other Jobs Existence Of Education / Training Enough Education / Training Received? Consultant For Improvements Location Of VDT (Work-Station)												Q 8 Q 9 Q 10 Q 11 Q 12 Q 13 Q 14 Q 15 Q 16 Q 17											
BREAK DOWN	TAPE POS. CATEGORY												TAPE POS. CATEGORY											
A	043(1) Sex X Age	043(2) Sex X Age	4	X12																				
B	043(1) Sex X Job Type	02 Sex X Job Type	3	X 8																				
C	043(1) Sex X Working Time	05 Sex X Working Time	3	X 8																				
D	043(1) Sex X Continuous Working Time	06 Sex X Continuous Working Time	3	X 10																				
E	043(1) Sex X Employment Status	044 Sex X Employment Status	3	X 7																				
F	043(1) Sex X Working Shifts	045 Sex X Working Shifts	3	X 4																				
G	02 Job Type X Screen Watching Time	011 Job Type X Screen Watching Time	7	X 11																				
H	043(1) Job Type X Existence of Norm	012 Job Type X Existence of Norm	3	X 3																				
I	043(1) Sex X Existence of Job Training	015 Sex X Existence of Job Training	3	X 3																				
J	043(1) Sex X Desired to Quit Working?	013 Sex X Desired to Quit Working?	3	X 3																				
K	043(1) Sex X VDT Handling Easiness	027 Sex X VDT Handling Easiness	3	X 4																				
L	06 Continuous Working Time X Maximum Working Time	09 Continuous Working Time X Maximum Working Time	10	X 14																				
M	01 Experience Period X Job Type	02 Experience Period X Job Type	7	X 13																				
N	01 Experience Period X Consultant for Improvements	016 Experience Period X Consultant for Improvements	13	X 8																				
O	043(1) Sex X Consultant for Improvements	016 Sex X Consultant for Improvements	3	X 8																				
P	09 Maximum Working Time X Existence of Norm	012 Maximum Working Time X Existence of Norm	14	X 3																				
Q	010(1) Existence of Recess Time	010(1) Existence of Recess Time	4																					
R	042(5) Abnormal Pregnancy	042(5) Abnormal Pregnancy	5																					
S	042(6) Abnormal Parturition	042(6) Abnormal Parturition	8																					

Table 2 (Cont'd.)

Cross Reference Table for Data Analysis

REF. NO.	Q. NO.												Q. NO.											
	025	026	027	028	029	030	031	032	033	034	035	036	037	038	039	040	041	042	043	044	045	046	047	048
REMARKS	Clearness Of VDT Room Lighting Task Lighting Supplemental Lighting Bothered By Glare, Reflection Or Flicker? Caused For Operation Difficulties Noise In Work-Station? Air Conditions In Work-Station? No. Of Workers In One Work-Station Space For Desk/Working Table Height Adjustable? Chair Adjustable?												EYES CONDITIONS VDT Handling Easiness VDT Improvements Tendency to impose Jobs On Workers Work Fatigue (1) (4) (7) (10) (13) (16) (19) (1) (3) (6) (9) (12) (15) (18) (21) (16) Multi-Score											
BREAK DOWN	TAPE POS. CATEGORY												TAPE POS. CATEGORY											
A	043(1) Sex X Age	043(2) Sex X Age	4	X 12																				
B	043(1) Sex X Job Type	02 Sex X Job Type	3	X 8																				
C	043(1) Sex X Working Time	05 Sex X Working Time	3	X 8																				
D	043(1) Sex X Continuous Working Time	06 Sex X Continuous Working Time	3	X 10																				
E	043(1) Sex X Employment Status	044 Sex X Employment Status	3	X 7																				
F	043(1) Sex X Working Shifts	045 Sex X Working Shifts	3	X 4																				
G	02 Job Type X Screen Watching Time	011 Job Type X Screen Watching Time	7	X 11																				
H	043(1) Job Type X Existence of Norm	012 Job Type X Existence of Norm	3	X 3																				
I	043(1) Sex X Existence of Job Training	015 Sex X Existence of Job Training	3	X 3																				
J	043(1) Sex X Desired to Quit Working?	013 Sex X Desired to Quit Working?	3	X 3																				
K	043(1) Sex X VDT Handling Easiness	027 Sex X VDT Handling Easiness	3	X 4																				
L	06 Continuous Working Time X Maximum Working Time	09 Continuous Working Time X Maximum Working Time	10	X 14																				
M	01 Experience Period X Job Type	02 Experience Period X Job Type	7	X 13																				
N	01 Experience Period X Consultant for Improvements	016 Experience Period X Consultant for Improvements	13	X 8																				
O	043(1) Sex X Consultant for Improvements	016 Sex X Consultant for Improvements	3	X 8																				
P	09 Maximum Working Time X Existence of Norm	012 Maximum Working Time X Existence of Norm	14	X 3																				
Q	010(1) Existence of Recess Time	010(1) Existence of Recess Time	4																					
R	042(5) Abnormal Pregnancy	042(5) Abnormal Pregnancy	5																					
S	042(6) Abnormal Parturition	042(6) Abnormal Parturition	8																					

Chart No. 1

Q 43 - 1 By Sex

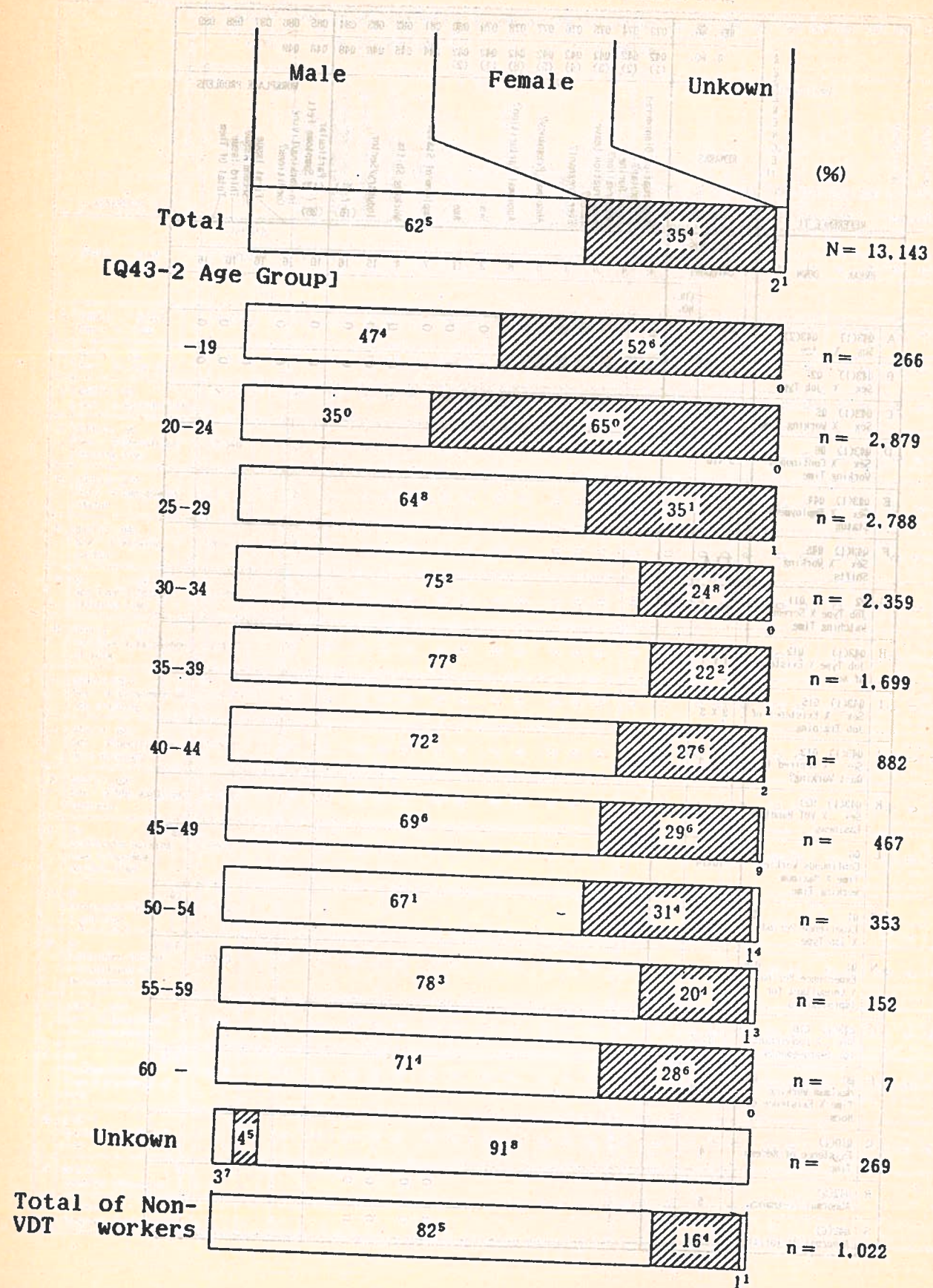


Chart No. 2

Q 43 - 2 By Age

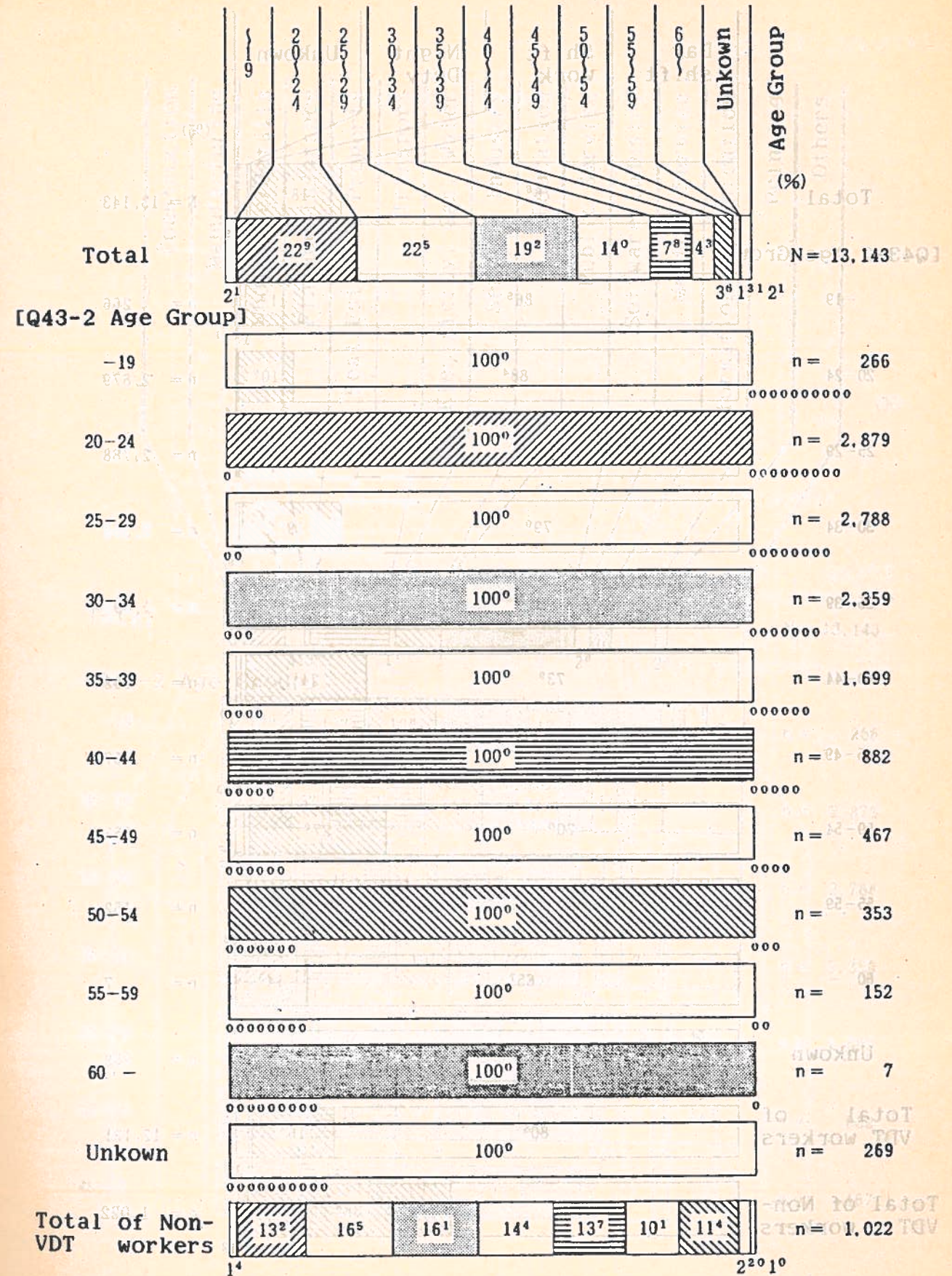


Chart No. 3

Q 45 Forms of Work

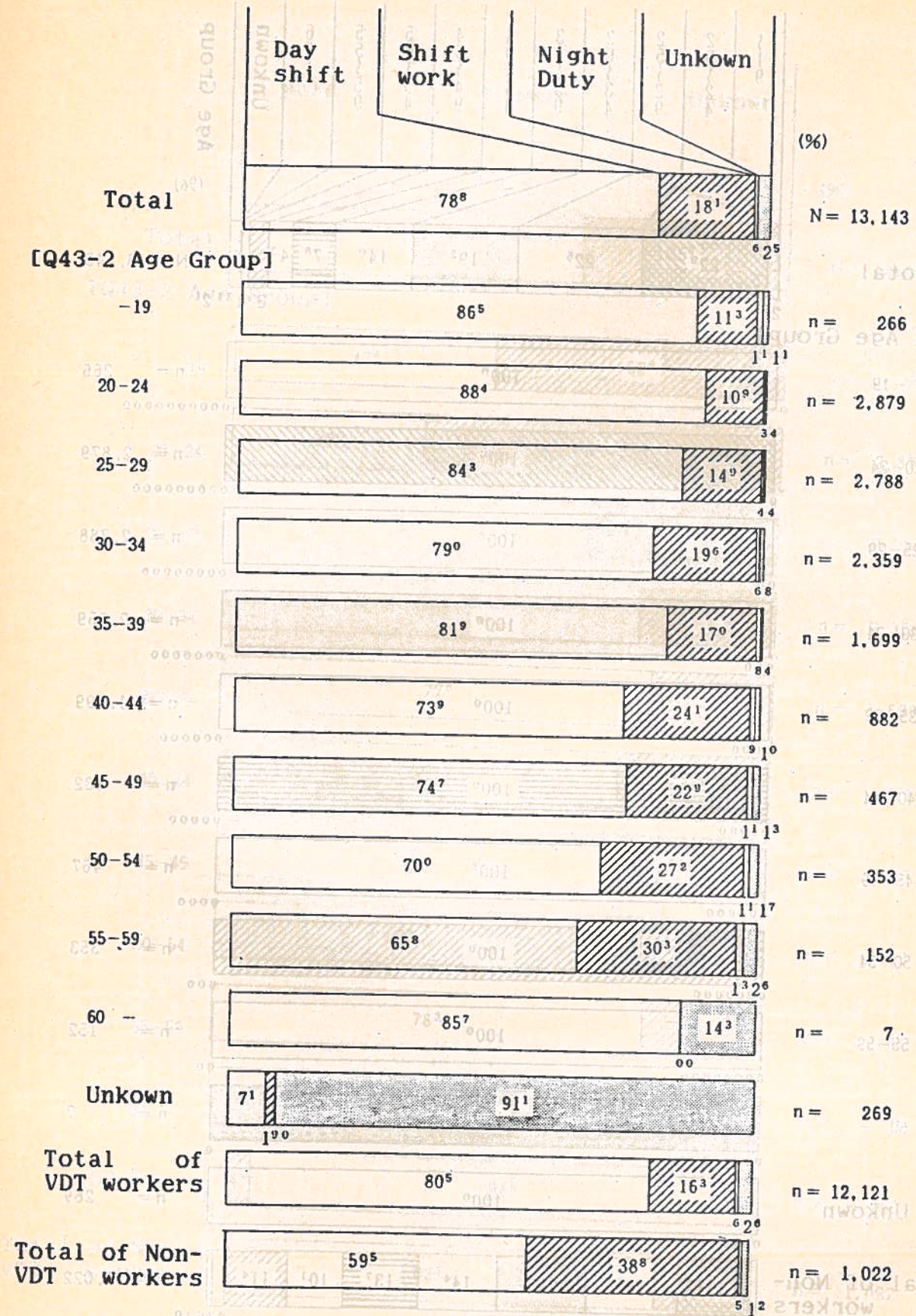


Chart No. 4

Q 46 Industry/Sector

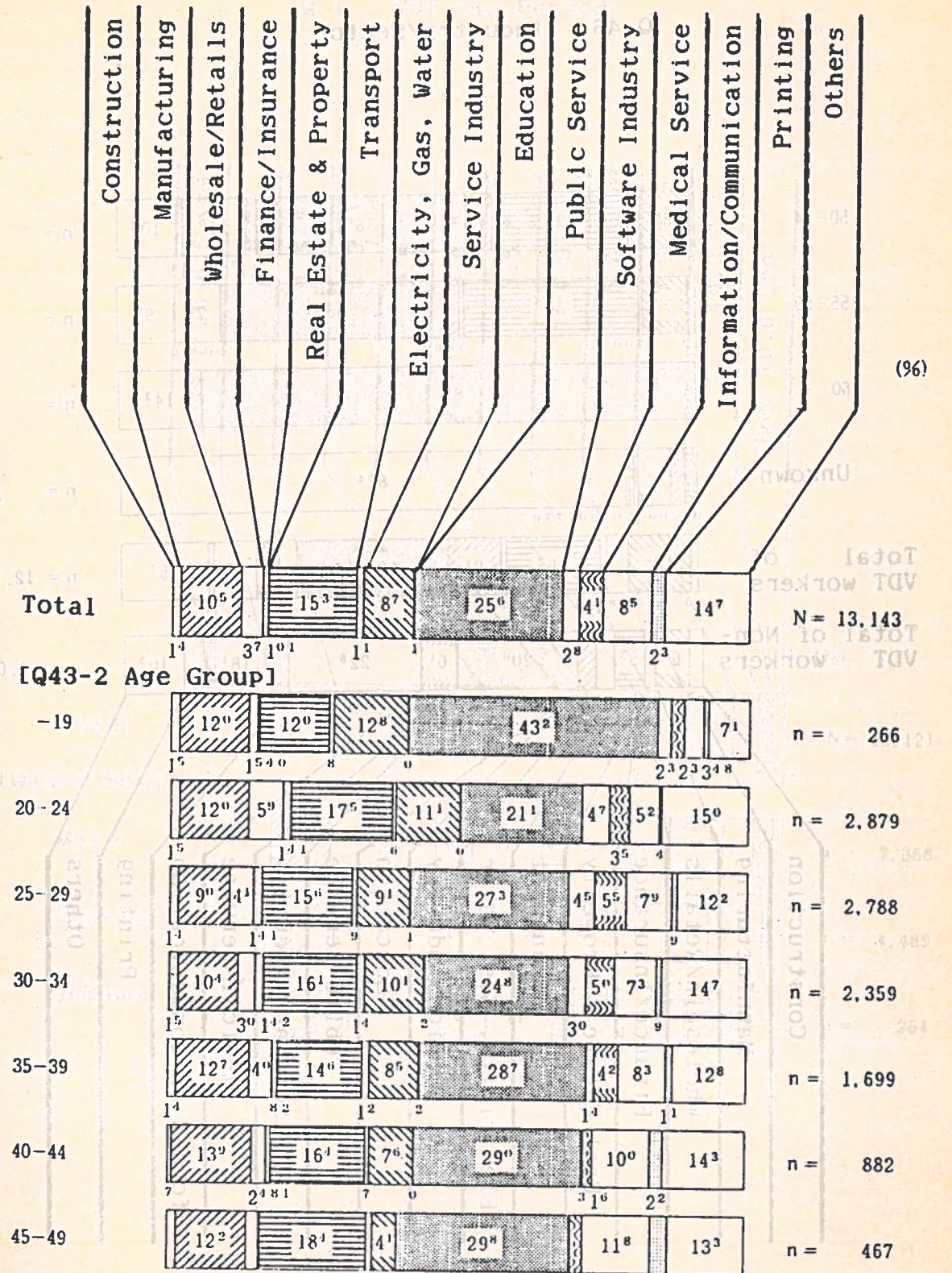


Chart No. 4 (Cont'd.)

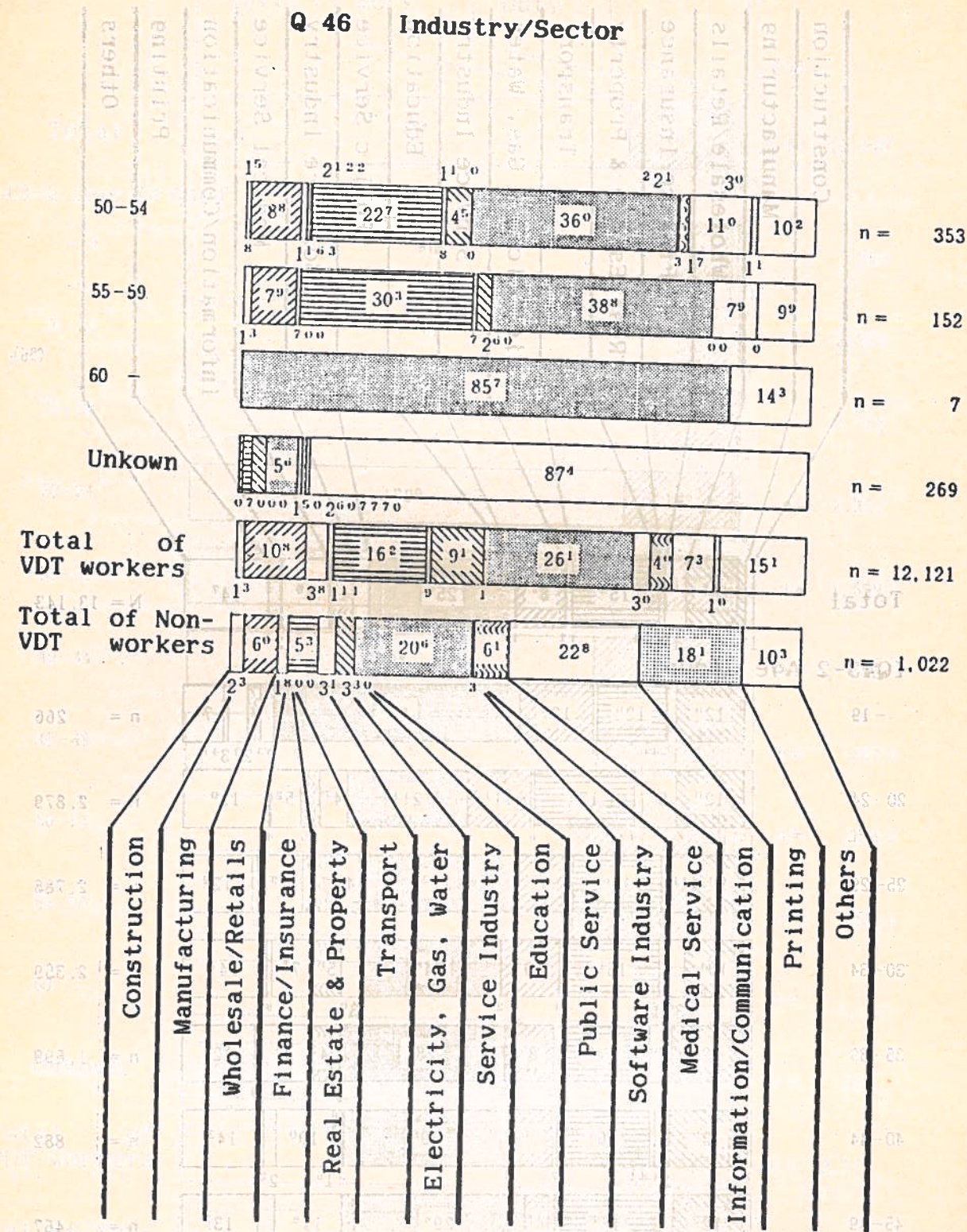


Chart No. 5

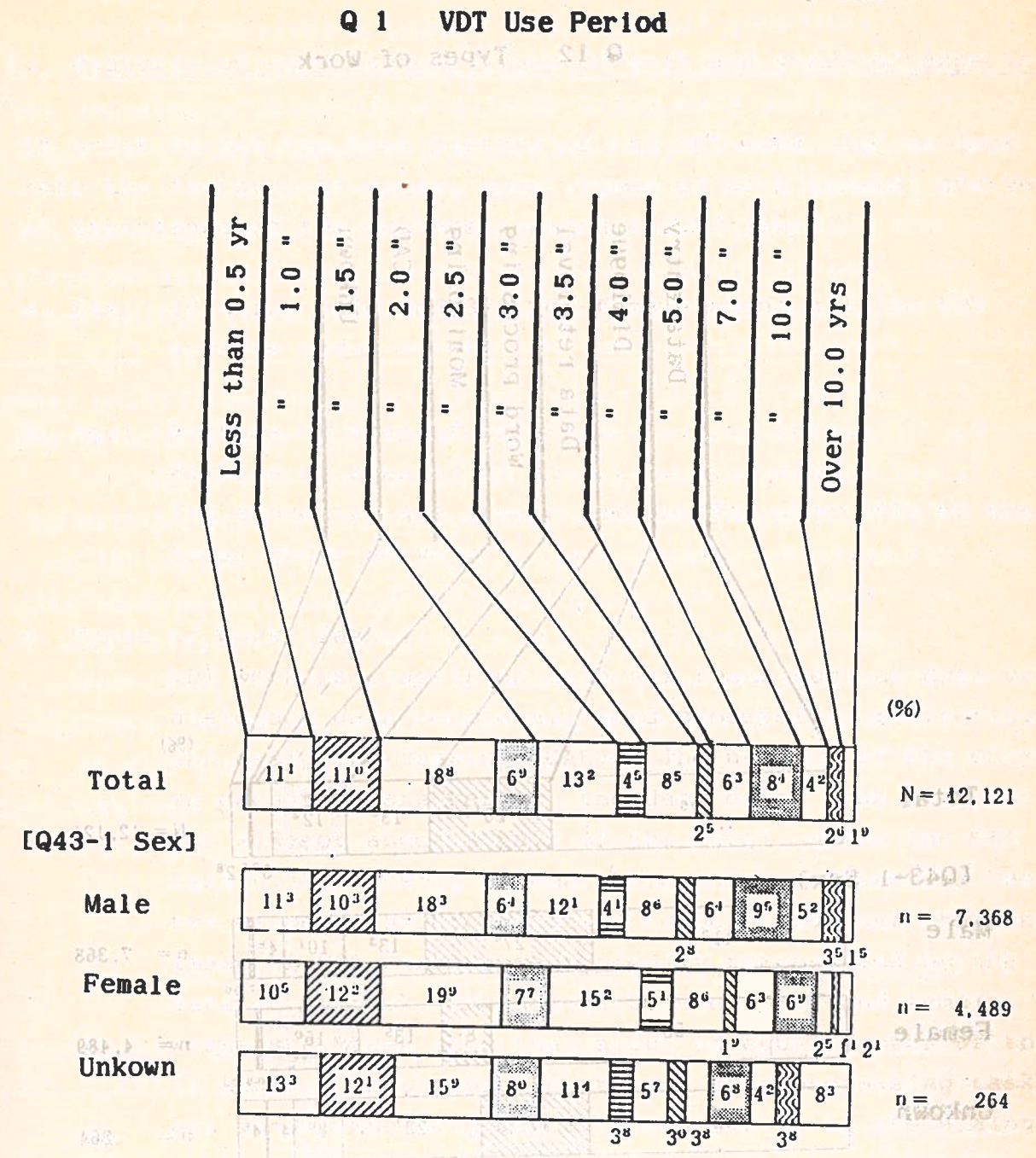
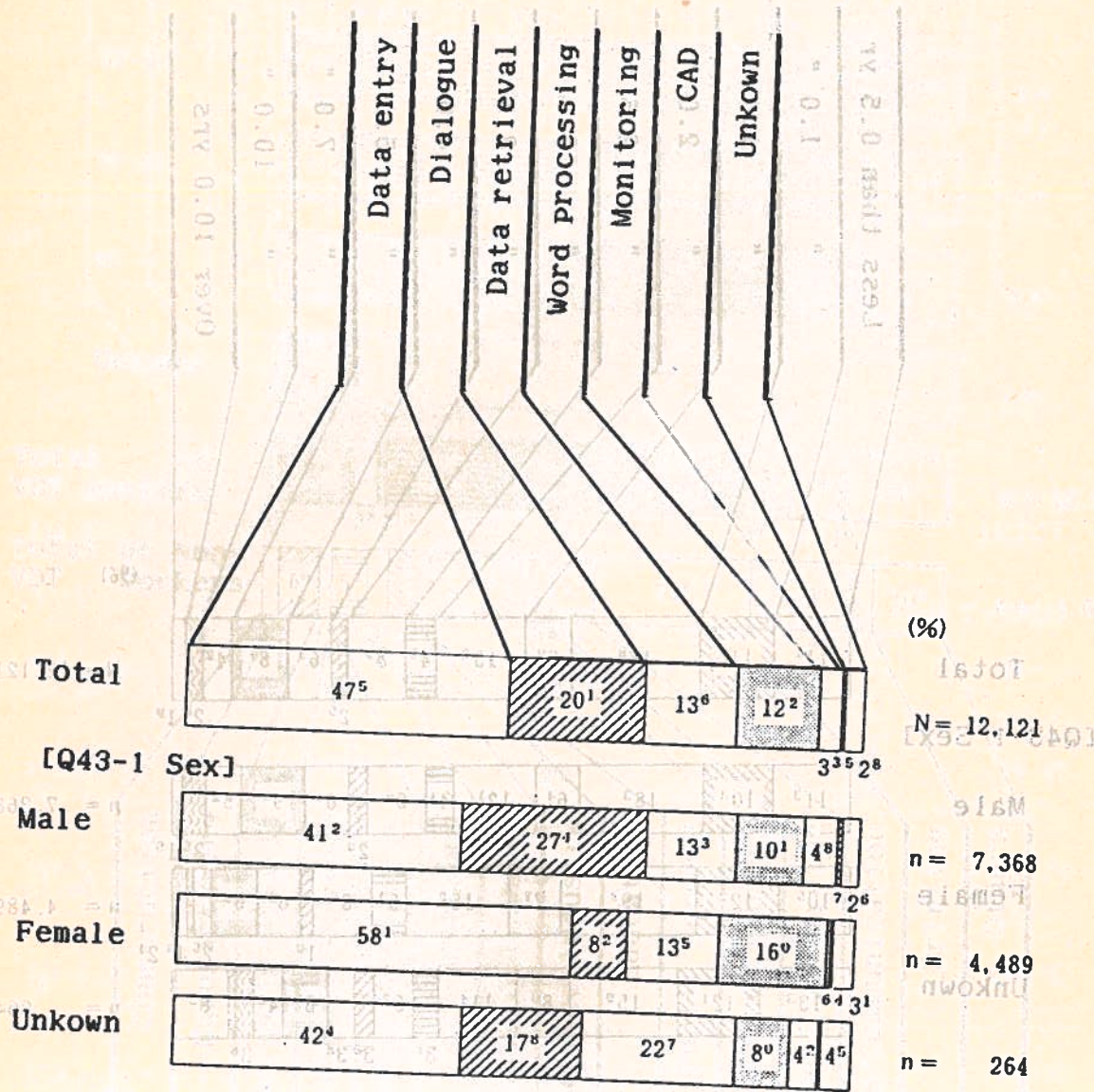


Chart No. 6

Q 12 Types of Work



CHAPTER I - Actual Situation Of VDT Work

1. Features of ages, sexes, types of work and years of experience

In order to get the true picture of the VDT work, let us look into the features of sexes, ages, types of work (tasks) and years of experience of the workers engaged in VDT jobs.

a. Sex: 60 % for male and 37% for female among all the VDT workers under survey.

b. Age: Workers of ages of 20's 46%
 Workers of ages of 30's 33%
 The above two age groups account for about 80% of the total under survey.

c. Types of Work (Tasks):
 VDT work is classified into six tasks such as data entry, dialogue, data retrieval, word processing, monitoring and designing/drawing (CAD). The numbers of the workers in each type are varied; the data entry task accounts for 47%, or about a half of the total, while the CAD task 0.5%, showing a remarkable unbalance between these two alone. Therefore, it is to be noted that the whole image of VDT workers is typically represented by the data entry task. Relations between male and female workers by task show that about an equal number of them is engaged in the data entry and word processing tasks, but an overwhelming majority of male is in the dialogue, monitoring and CAD tasks.
 Looking into the age groups by task, the two groups of 20's and 30's represent more than 80% of the total tasks as mentioned earlier, while the group of 40's occupies a little over 22% of the monitoring task, illustrating a larger share of the middle aged and elderly people in this task.

d. Years of experience:

The VDT workers with experience up to 2 years, a considerably "short term", occupy a share of 47%, or about a half of the total, while those with experience of 2 to 4 years, a "medium term", keep a share of 28%, and others with experience of above 4 years, a relatively "long term", have a share of 21%. Looking at the percentage of VDT work by task, we can see the data entry task has the overwhelming majority, or the highest rate in all of the short, medium and long terms. Among these workers, longer the experiences larger the shares in the dialogue and monitoring tasks, and shorter the experiences smaller the shares in the word processing, data retrieval and CAD tasks.

This trend represents the features of the experience periods of respective tasks. In other words, if we look into the group based on the task/experience elements a relatively large group with a shorter term caters for word processing and data retrieval tasks.

Nobody would deny that this trend is linked with the time when the VDT devices are increasingly spread. On the other, more workers with longer terms are assigned to the dialogue and monitoring tasks. (Table 1-2)

(Table 1-2)

Grouping of VDT Workers by Experience Period/Task

Experience Period VDT Tasks	Short term (up to 2 yrs.)	Medium Term (2-4 yrs.)	Long Term (over 4 yrs.)
Data entry	48%	51%	44%
Dialogue	15	21	32
Data retrieval	14	15	13
Word processing	18	9	3
Monitoring	1	3	7
Designing/Drawing(CAD)	0	1	0
Total	100% (5,796 persons)	100% (3,479)	100% (2,621)

2. Working Conditions Including VDT Working Time, Recess, and Norm

- a. The VDT working hours are greatly varied among the VDT workers. The women work longer than men, and those assigned to designing/drawing (CAD), dialogue, and monitoring tasks work longer than others in other tasks. Fundamentally a problem will be posed when the individual workers are arbitrarily required to work long hours on VDT without any regulations on operation time. Moreover, 20% of them "cannot" take recesses and 23% are imposed the "norma".
- b. The working conditions of VDT work are more strictly imposed upon the women at large than men, causing a great discrimination against women, in respect to the daily VDT operation time, continuous VDT working time, existence of recess time and norm.

- c. More jobs in addition to their proper ones may be imposed upon the VDT workers as they have gained more experiences. In other words, the large-scaled work reorganization is taking place in parallel with the computerization. On the other, some of the workers assigned to data entry and dialogue tasks are increasingly specialized, thus polarizing themselves against each other to an extreme end.

- d. 35% of the VDT workers are ready to desire to quit working on VDT equipment, even though the VDT work has become the star occupation, considered as the frontier job, in fact.

Table No. 1-1

Sex, Age, Job Types, Years of Experience of VDT Workers

* In the column of "Job Types", percentages of men and women figures in parenthesis show engaged in each type of jobs as listed.

	Total	Male	Female
Grand Total	12,121	7,368	4,489
		60.8%	37.0%
Age			
- 19	266	126	140
20 - 24	2,879	1,007	1,872
25 - 29	2,788	1,808	978
30 - 34	2,359	1,773	585
35 - 39	1,699	1,321	377
40 - 44	882	637	243
45 - 49	467	325	138
50 - 54	353	237	111
55 - 59	152	119	31
60 -	7	5	2
		0.1	0.7
Job Types			
Date entry	5,753	3,035	2,610
Dialogue	2,433	2,018	368
Date retrieval	1,647	980	607
Word processing	1,484	743	720
Monitoring	396	356	29
Designing/ Drawing(CAD)	65	48	16
Unkown	339	188	139
		2.6	3.1
Sub-Total	12,121	7,368	4,489
	100.0	100.0	100.0
Years of Experience			
Less than			
0.5 year	1,340	835	470
" 1.0 "	1,337	759	546
" 1.5 "	2,281	1,346	893
" 2.0 "	838	471	346
" 2.5 "	1,599	888	681
" 3.0 "	546	305	231
" 3.5 "	1,034	632	387
" 4.0 "	300	208	84
" 5.0 "	768	474	284
" 7.0 "	1,023	697	308
"10.0 "	509	385	113
More than			
10.0 "	321	261	50
Unkown	225	107	96
		1.5	2.1
Sub-Total	12,121	7,368	4,489
	100.0	100.0	100.0

Chart No. 1-1

Age Group/Job Type

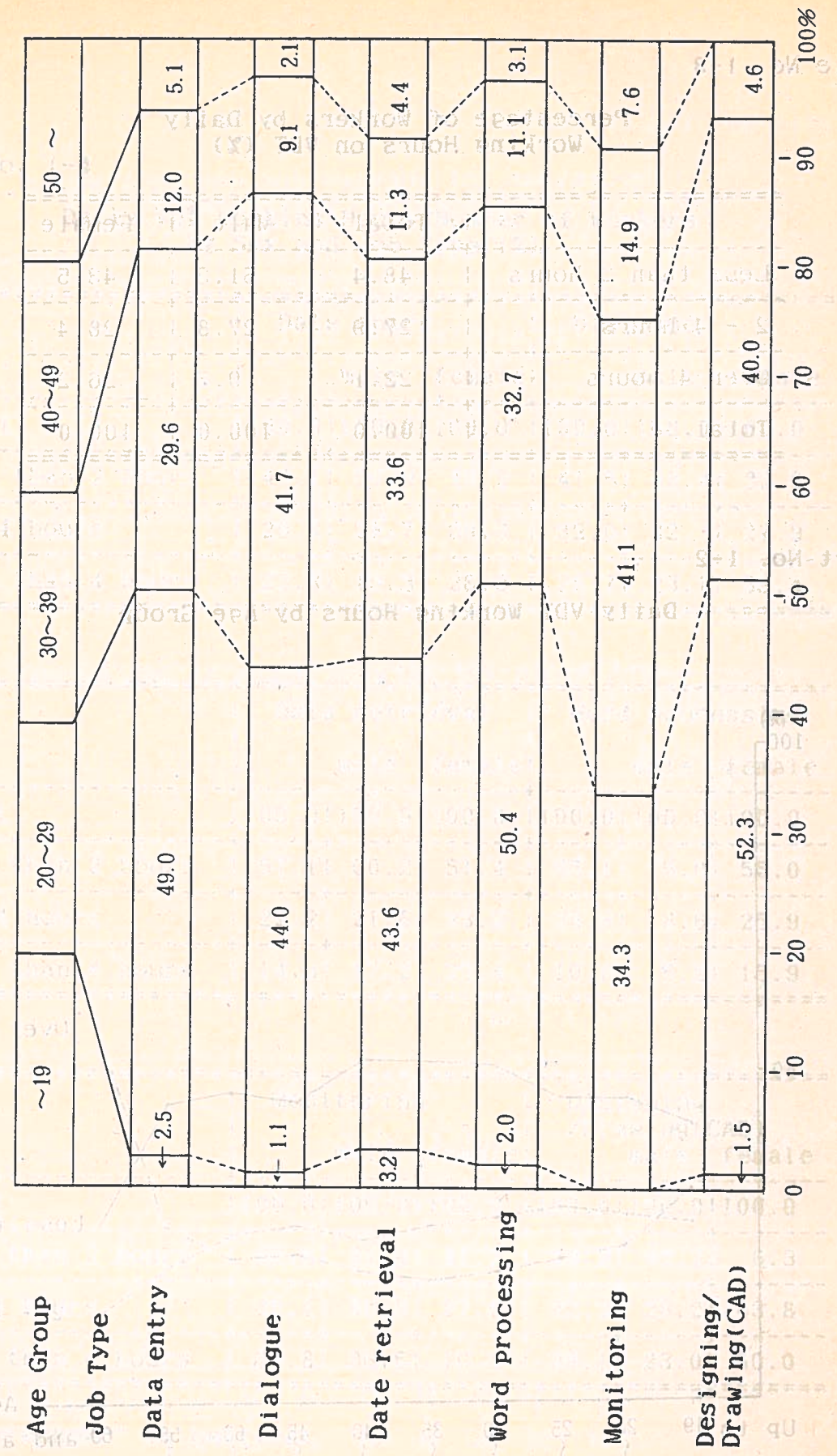


Table No. 1-3

Percentage of Workers by Daily Working Hours on VDT (%)

	Total	Male	Female
Less than 2 hours	48.4	51.3	43.5
2 - 4 hours	27.9	27.8	28.4
Over 4 hours	22.1	19.7	26.2
Total	100.0	100.0	100.0

Chart No. 1-2

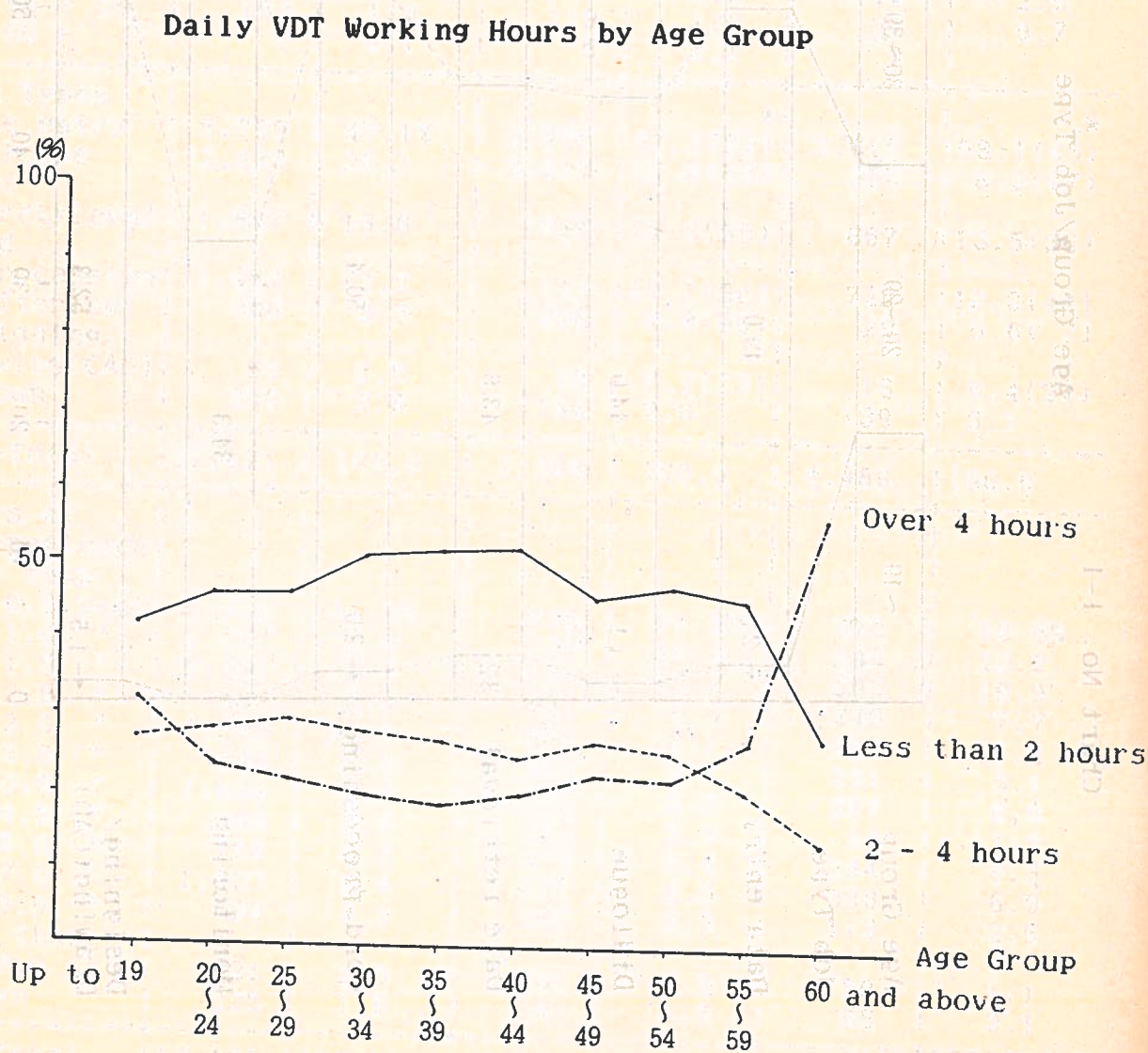


Table No. 1-4

Daily VDT Working Hours/Number of Workers by Sex and Job Type (%)

	Date entry		Dialogue	
	male	female	male	female
Total	100.0	100.0	100.0	100.0
Less than 2 hours	46.1	50.9	40.2	41.5
2 - 4 hours	29.4	28.7	30.3	32.0
More than 4 hours	23.3	19.3	28.2	25.7

	Data retrieval		Word processing	
	male	female	male	female
Total	100.0	100.0	100.0	100.0
Less than 2 hours	57.1	60.2	51.4	65.1
2 - 4 hours	22.2	21.6	23.9	36.6
More than 4 hours	14.3	17.2	23.4	10.8

	Monitoring		Designing / Drawing(CAD)	
	male	female	male	female
Total	100.0	100.0	100.0	100.0
Less than 2 hours	32.6	31.4	41.3	33.9
2 - 4 hours	30.1	30.9	27.6	32.3
More than 4 hours	34.8	36.5	10.3	30.1

Note: "Unkown" is omitted.

Table No. 1-5

Percentage of Workers for one Continuous VDT Working Period (%)

	Total	Male	Female
Less than 30 minutes	20.7	22.1	17.9
30 minutes - 1 hour	27.2	27.6	26.7
Over 1 hour	50.4	49.1	53.2
Total	100.0	100.0	100.0

Chart No. 1-4

Continuous VDT Working Hours by Age Group

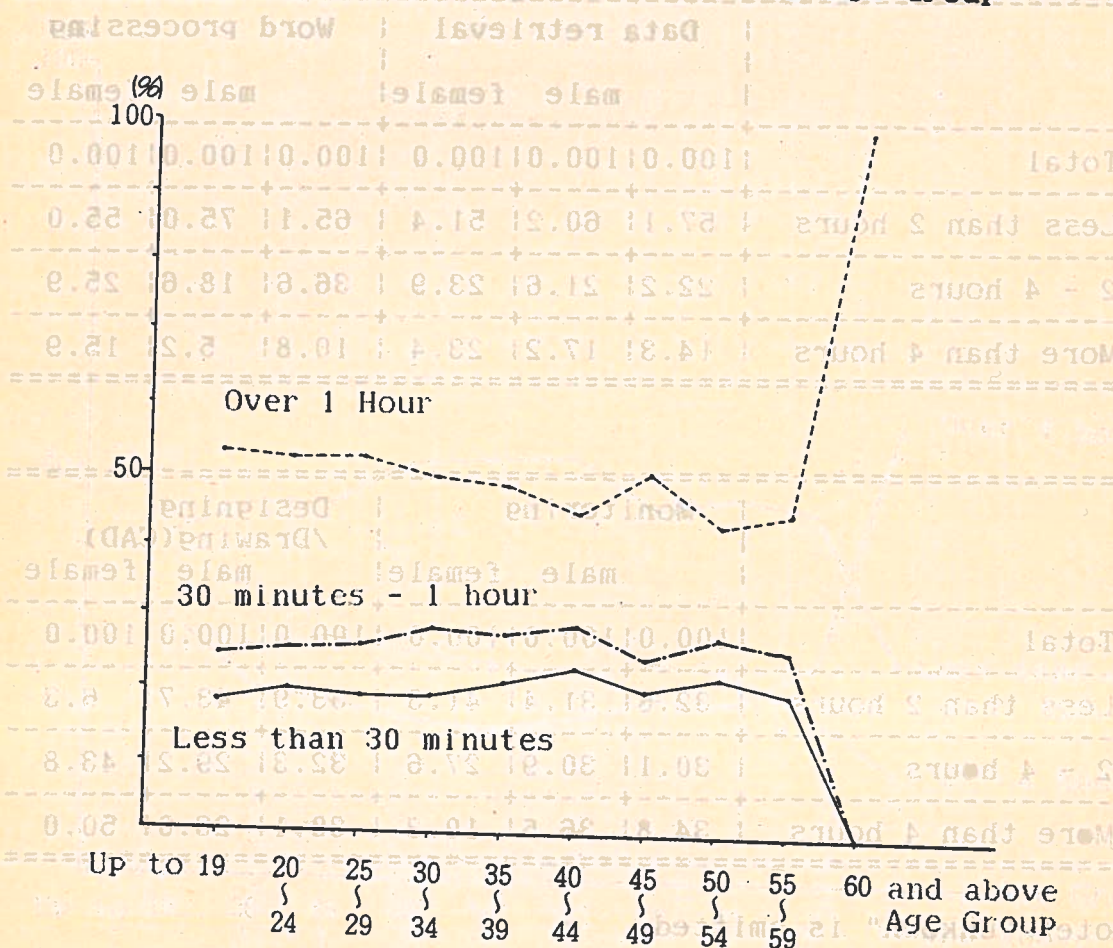


Table No. 1-6

Percentage of Workers for Continuous VDT Working Hours/By Sex and Job Type (%)

	Date entry		Dialogue	
	male	female	male	female
Total	100.0	100.0	100.0	100.0
Less than 30 minutes	19.2	21.4	16.4	17.5
30 minutes - 1 hour	29.8	29.0	31.0	26.2
More than 1 hour	49.6	48.6	51.0	53.8

	Data retrieval		Word processing	
	male	female	male	female
Total	100.0	100.0	100.0	100.0
Less than 30 minutes	41.5	42.6	39.5	7.9
30 minutes - 1 hour	25.6	25.3	26.4	23.5
More than 1 hour	31.3	30.8	32.9	67.3

	Monitoring		Designing /Drawing(CAD)	
	male	female	male	female
Total	100.0	100.0	100.0	100.0
Less than 30 minutes	26.5	26.7	20.7	7.7
30 minutes - 1 hour	17.9	17.7	20.7	16.9
More than 1 hour	53.2	55.3	34.5	75.3

Note: "Unkown" is omitted.

Chart No. 1-5

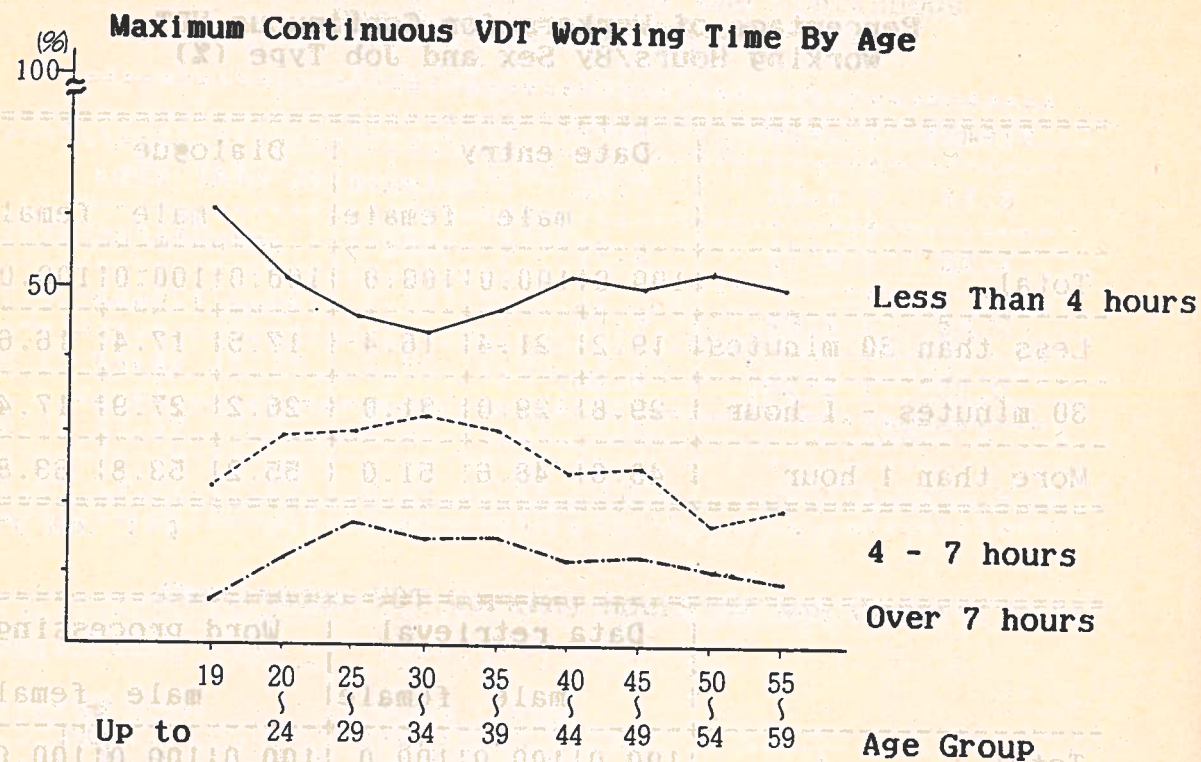


Table No. 1-7

Percentage of Workers Taking Recess (%)

	Total	Male	Female
Generally Taken	54.3	58.2	48.4
Occasionally Taken	18.4	20.2	15.5
Cannot Take	20.0	15.4	27.9
Total	100.0	100.0	100.0

Table No. 1-8

VDT Operation Time and Recess Taken /Percentage of Workers By Sex

	Male	Female
Daily VDT Operation Time		
Less than 2 hours	51.3	43.5
2 - 4 hours	27.8	28.4
Over 4 hours	19.7	26.2
One Continuous VDT Operation Time		
Less than 30 minutes	22.1	17.9
30 minutes - 1 hour	27.6	26.7
Over 1 hour	49.1	53.2
Recess		
Generally Taken	58.2	48.4
Occasionally taken	20.2	15.1
Cannot take	15.4	27.9
Maximum VDT Operation Time		
Less than 4 hours	46.0	53.3
4 - 7 hours	31.1	26.4
Over 7 hours	17.3	10.3

Chart No. 1-6

Order of Recess Taken By Type of Task /VDT Operation Time

	Continuous Operation Time Over 1 Hour (Order of Number of Workers)	Continuous Operation Time Over 4 Hours (Order of Number of Workers)
1st:	CAD (F) 93.7%	CAD (F) 50.0%:(a)
2nd:	Word processing (F) 75.7	Dialogue (F) 39.0 :(b)
3rd:	CAD (M) 68.8	Monitoring (M) 36.5 :(c)
4th:	Dialogue (F) 63.8	Data entry (F) 28.2 :(d)
5th:	Word processing (M) 59.3	Data retrieval (F) 23.4 :(e)
6th:	Monitoring (M) 55.3	Dialogue (M) 23.1 :(f)
7th:	Dialogue (M) 53.8	CAD (M) 23.0 :(g)
8th:	Data entry (F) 51.0	Data entry (M) 19.3 :(h)
9th:	Data entry (M) 48.6	Data retrieval (M) 17.2 :(i)
10th:	Monitoring (F) 34.5	Word processing (F) 15.9 :(j)
11th:	Data retrieval (F) 32.9	Monitoring (F) 10.3 :(k)
12th:	Data retrieval (M) 30.8	Word processing (M) 5.2 :(l)

Note: F:Female, M:Male

Chart No. 1-6(Cont'd.)

Order of Recess Taken By Type of Task /VDT Operation Time

	Order of Number of Workers Who Cannot Take Recess After Continuous Operation	Maximum Operation Time Over 7 Hours (Order of Number of Workers)
1st:(a)*	* Data entry (F) 29.4%	* CAD (M) 37.6%
2nd:(b)*	* Word processing (F) 28.6	* Monitoring (M) 31.9
3rd:(c)*	* Data retrieval (F) 25.2	* Dialogue (M) 23.7
4th:(d)*	* CAD (F) 25.0	* CAD (F) 18.8
5th:(e)*	* Dialogue (F) 21.5	* Word processing (M) 16.5
6th:(f)*	* Monitoring (F) 20.7	* Dialogue (F) 15.2
7th:(g)*	* Data retrieval (M) 19.7	* Word processing (F) 14.9
8th:(h)*	* Data entry (M) 16.9	* Data entry (M) 14.7
9th:(i)*	* Word processing (M) 15.2	* Data retrieval (M) 11.4
10th:(j)*	* Dialogue (M) 13.2	* Data entry (F) 9.2
11th:(k)*	* CAD (M) 8.3	* Data retrieval (F) 7.8
12th:(l)*	* Monitoring (M) 7.6	* Monitoring (F) 0.0

Note: F:Female, M:Male

Table No. 1-9

Education & Training of VDT Workers By Age Group & Evaluation

	Total	Not received	Received
Total (12,121)	100.0%	38.6%	59.4%
Male (7,368)	100.0	41.5	57.0
Female (4,489)	100.0	33.8	64.3
Age Group			
Up to 19	100.0	49.6	49.2
20 - 24	100.0	35.8	63.1
25 - 29	100.0	39.5	59.4
30 - 34	100.0	39.4	58.8
35 - 39	100.0	41.6	56.3
40 - 44	100.0	37.0	60.9
45 - 49	100.0	37.9	58.5
50 - 54	100.0	31.4	65.2
55 - 59	100.0	34.2	62.5
Above 60	100.0	100.0	-
Type of Task			
Data entry	100.0	38.0	60.5
Dialogue	100.0	37.8	60.5
Data retrieval	100.0	47.1	49.9
Word processing	100.0	38.4	59.8
Monitoring	100.0	24.5	73.0
Designing/ Drawing(CAD)	100.0	30.8	69.2

Table No. 1-9 (Cont'd.)

Education & Training of VDT Workers By Age Group & Evaluation

	Received but,		
	Total	Satisfactory	Unsatisfactory
Total (12,121)	7,199=100%	39.3%	59.1%
Male (7,368)	4,197=100%	37.6	61.2
Female (4,489)	2,885=100%	41.8	56.1
Age Group			
Up to 19	100.0	48.9	46.6
20 - 24	100.0	45.4	53.0
25 - 29	100.0	38.6	60.4
30 - 34	100.0	37.8	60.8
35 - 39	100.0	36.6	61.4
40 - 44	100.0	35.0	63.3
45 - 49	100.0	35.2	62.6
50 - 54	100.0	29.1	67.8
55 - 59	100.0	29.5	68.4
Above 60	100.0	-	-
Type of Task			
Data entry	100.0	38.5	60.0
Dialogue	100.0	42.8	55.4
Data retrieval	100.0	37.6	60.8
Word processing	100.0	36.2	62.8
Monitoring	100.0	46.0	51.9
Designing/ Drawing(CAD)	100.0	46.7	51.1

Chart No. 1-7

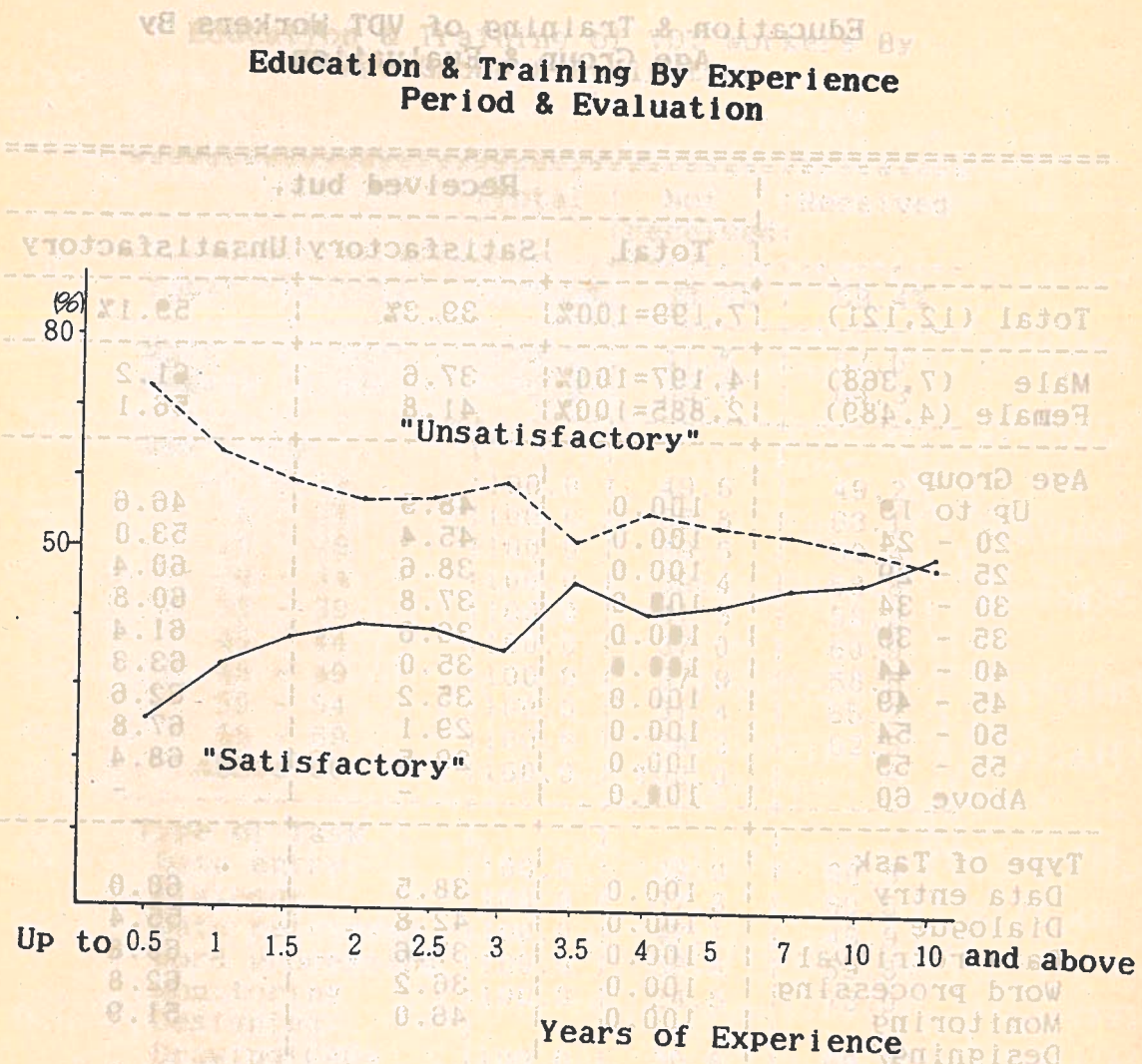


Chart No. 1-8 Percentage of Screen Watching Time During VDT Operation Hours By Age Group

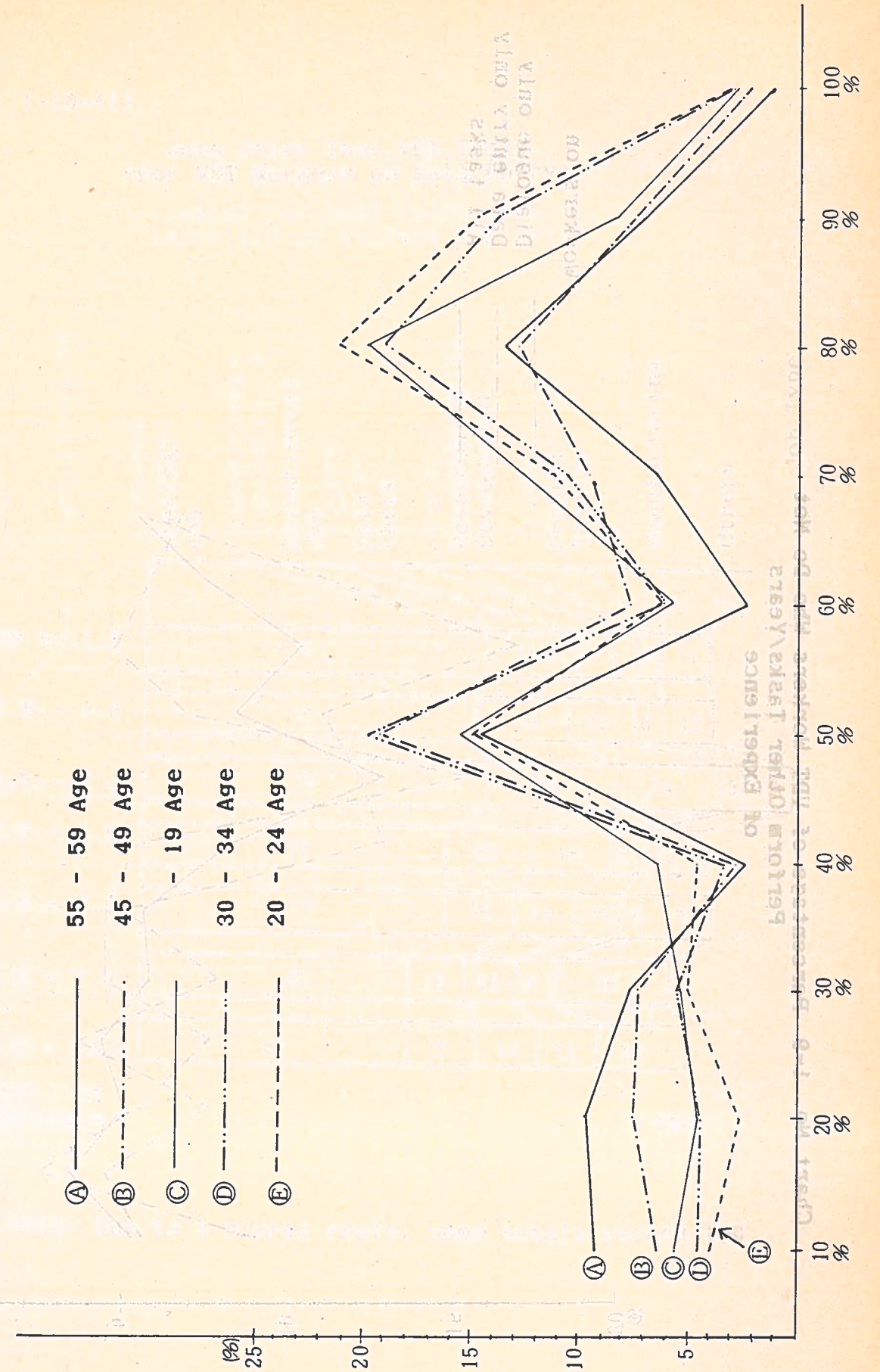


Chart No. 1-9 Percentage of VDT Workers Who Do Not Perform Other Tasks/Years of Experience

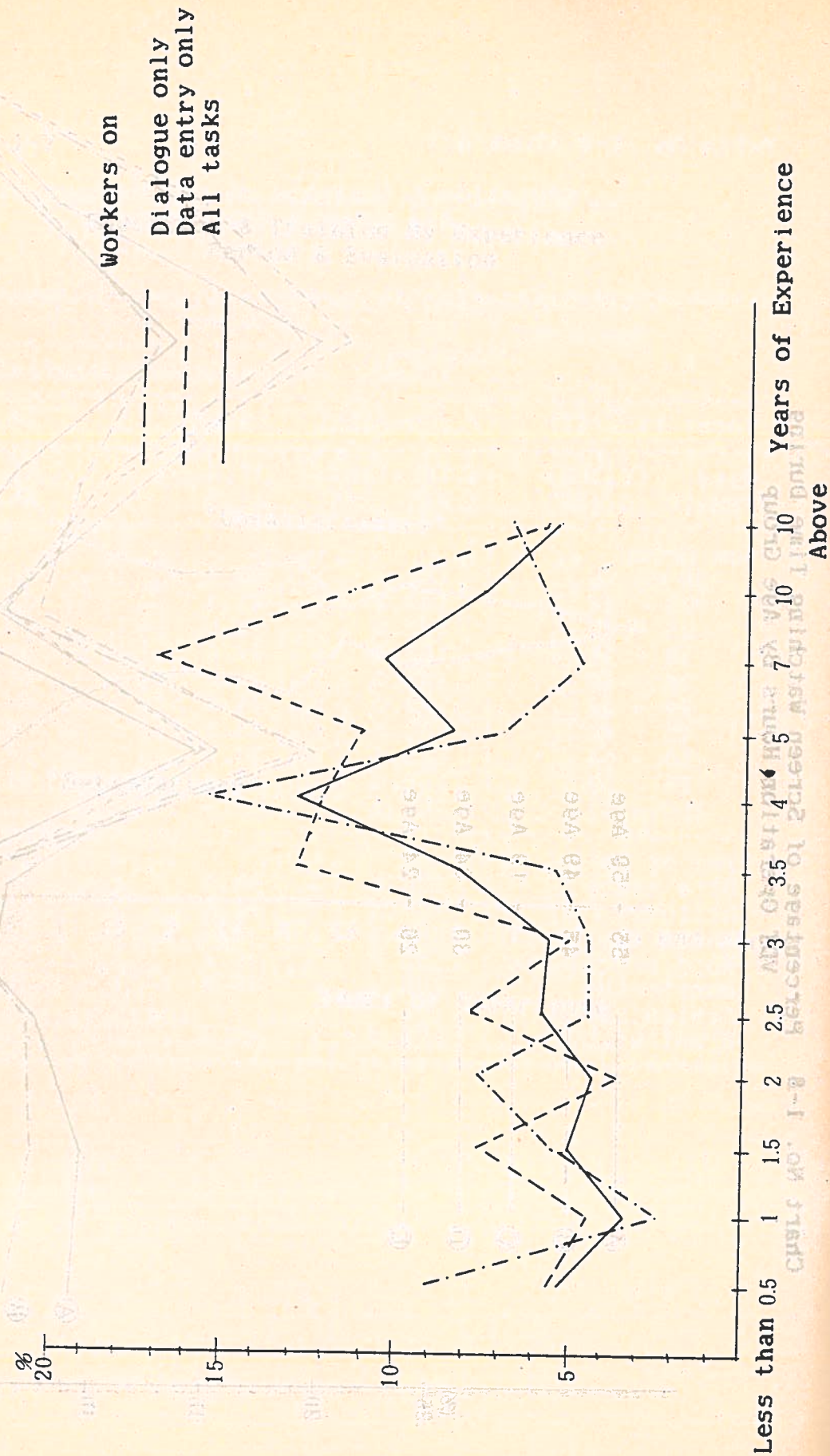
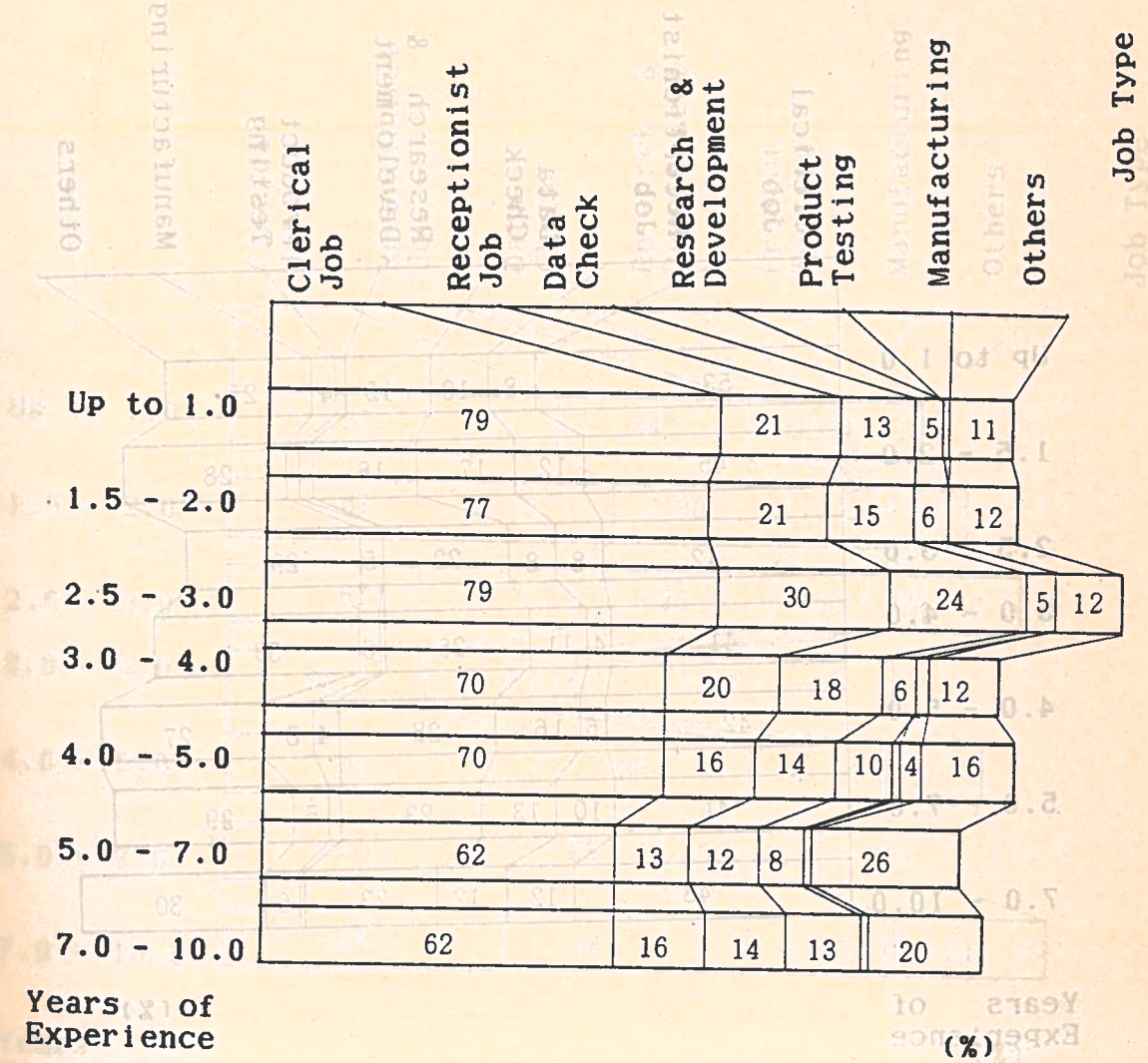


Chart No. 1-10-(1)

Jobs Other Than VDT Tasks
(For VDT Workers on Data Entry)

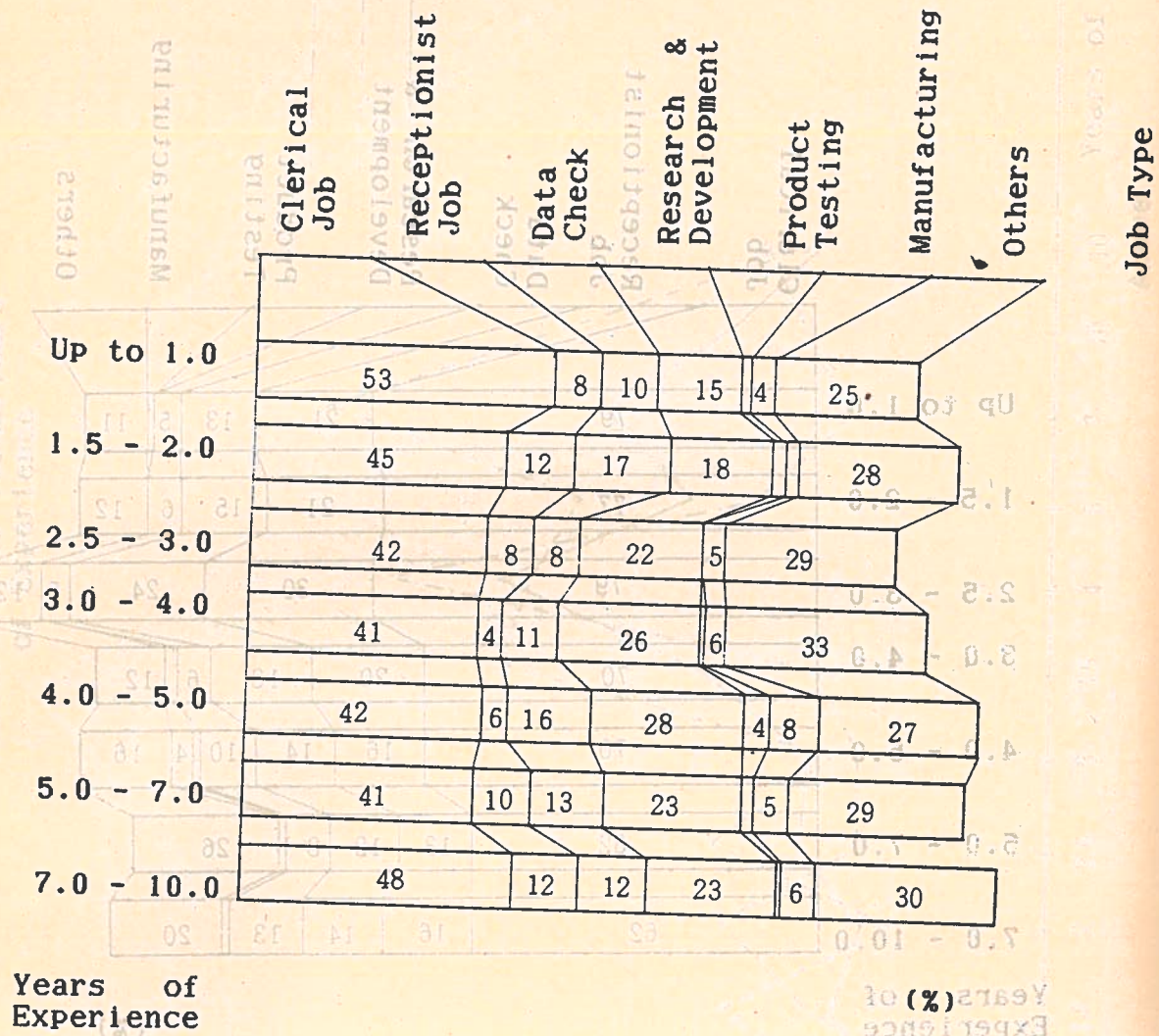


Years of Experience (%)

Note: Due to a plural reply, some totals exceed 100.

Chart No. 1-10-(2)

Jobs Other Than VDT Tasks
(For VDT Workers on Dialogue)



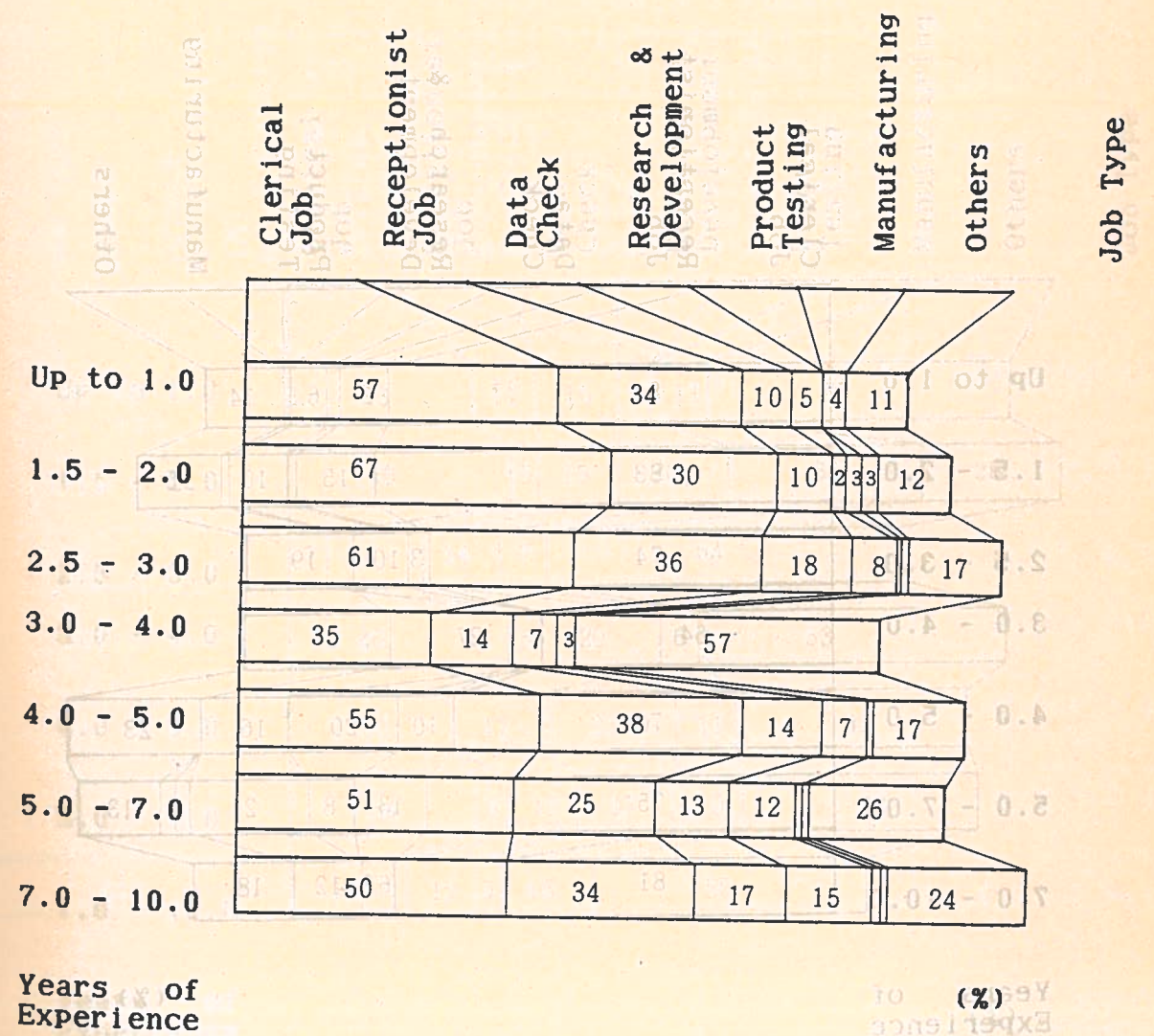
Years of Experience

(%)

Note: Due to a plural reply, some totals exceed 100.

Chart No. 1-10-(3)

Jobs Other Than VDT Tasks
(For VDT Workers on Data retrieval)



Years of Experience

(%)

Chart No. 1-10-(6)

**Jobs Other Than VDT Tasks
(For VDT Workers on Designing/
Drawing (CAD))**

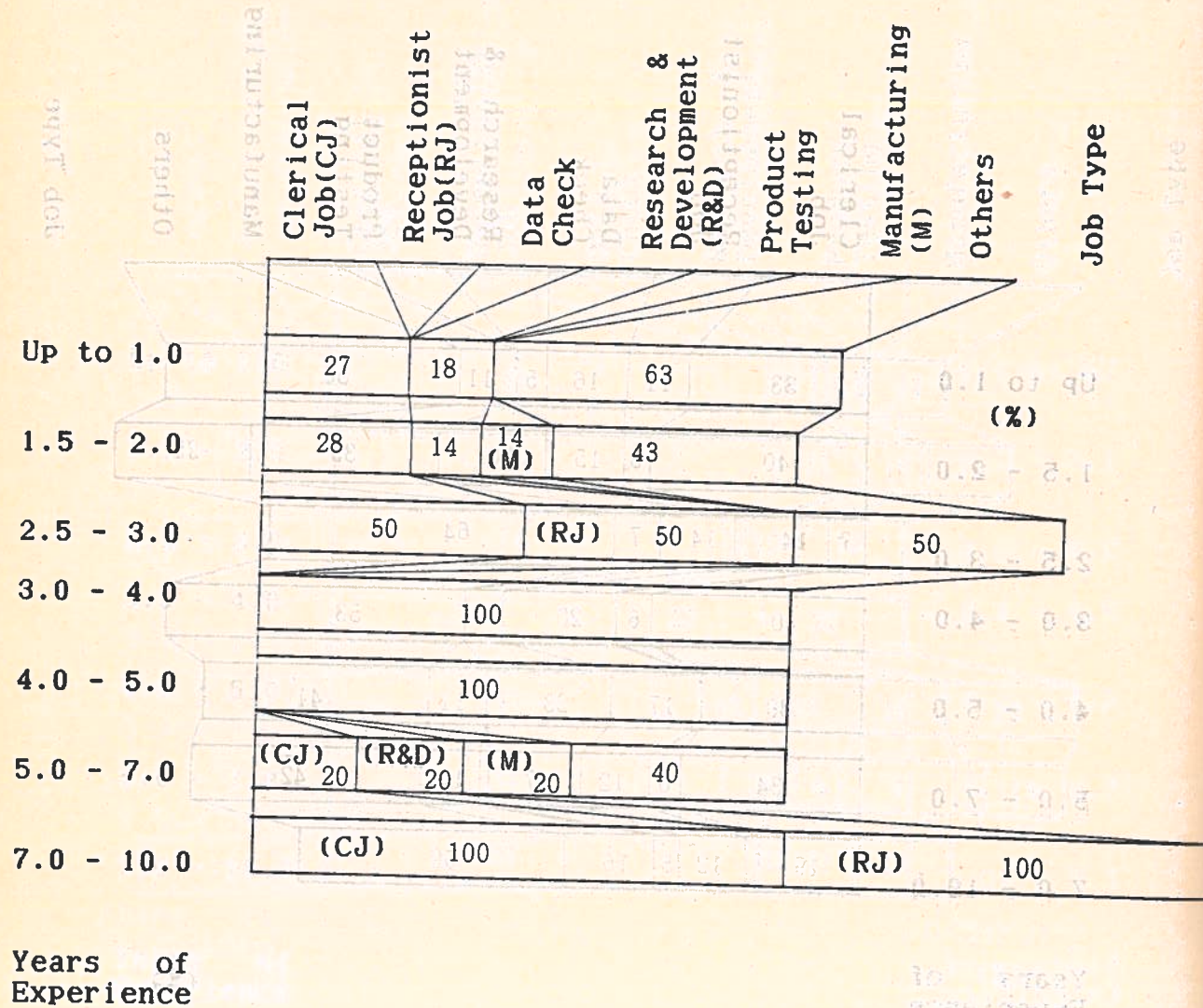


Table No. 1-10

Jobs Other Than VDT Tasks (%)

	Existence of Norm for VDT Workers (%)		
	Yes	No	Unknown
Total	91.6	6.2	2.2
Male	93.5	4.5	2.0
Female	89.2	7.9	3.9
Total	100.0	100.0	100.0
Male	100.0	100.0	100.0
Female	100.0	100.0	100.0

Note: Unknown is omitted.

Table No. 1-12

Order of Tasks with Norm (%)

Order	Type of Task	Sex	Norm in Existence (%)
1st	Designing	Female	50.0
2nd	Designing (CAD)	Female	28.5
3rd	Data entry	Female	28.4
4th	Data entry	Male	28.9
5th	Word processing	Female	28.9
6th	Designing	Male	28.9
7th	Designing (CAD)	Male	28.4
8th	Data retrieval	Male	28.0
9th	Data retrieval	Female	28.0
10th	Data retrieval	Female	18.8
11th	Monitoring	Male	18.0
12th	Monitoring	Female	17.5
13th	Data retrieval	Male	12.7
14th	Word processing	Male	9.3

Table No. 1-11

Existence of Norm for VDT Workers (%)

	Yes	No	Unkown	Total
Total	22.8	73.7	3.5	100.0
Male	21.0	77.2	1.8	100.0
Female	26.0	68.5	5.5	100.0
Data entry	27.7	69.0	3.3	100.0
Dialogue	22.3	75.7	2.0	100.0
Data retrieval	14.9	80.5	4.6	100.0
Word processing	16.4	80.6	3.0	100.0
Monitoring	17.4	78.8	3.8	100.0
Designing/ Drawing(CAD)	29.7	67.7	3.1	100.0

Table No. 1-12

Order of Tasks With Norm (%)

Order	Type of Task	Sex	Norm in existence
1st	Designing/ Drawing(CAD)	Female	50.0
2nd	Data entry	Female	29.5
3rd	Data entry	Male	26.4
4th	Word processing	Female	23.9
5th	Designing/ Drawing(CAD)	Male	22.9
6th	Dialogue	Male	22.4
7th	Dialogue	Female	22.0
8th	Data retrieval	Female	18.8
9th	Monitoring	Male	18.0
10th	Monitoring	Female	13.8
11th	Data retrieval	Male	12.7
12th	Word processing	Male	9.3

Table No. 1-13

"How you ever wished to quit working on VDT?"

	Total	Male	Female
Yes	35.2%	30.7%	43.2%
No	60.9	66.7	52.0
Unkown	3.8	2.6	4.8
Total	100.0	100.0	100.0

Chart No. 1-11

"Wish or Not Wish to Quit"/Sex and Task

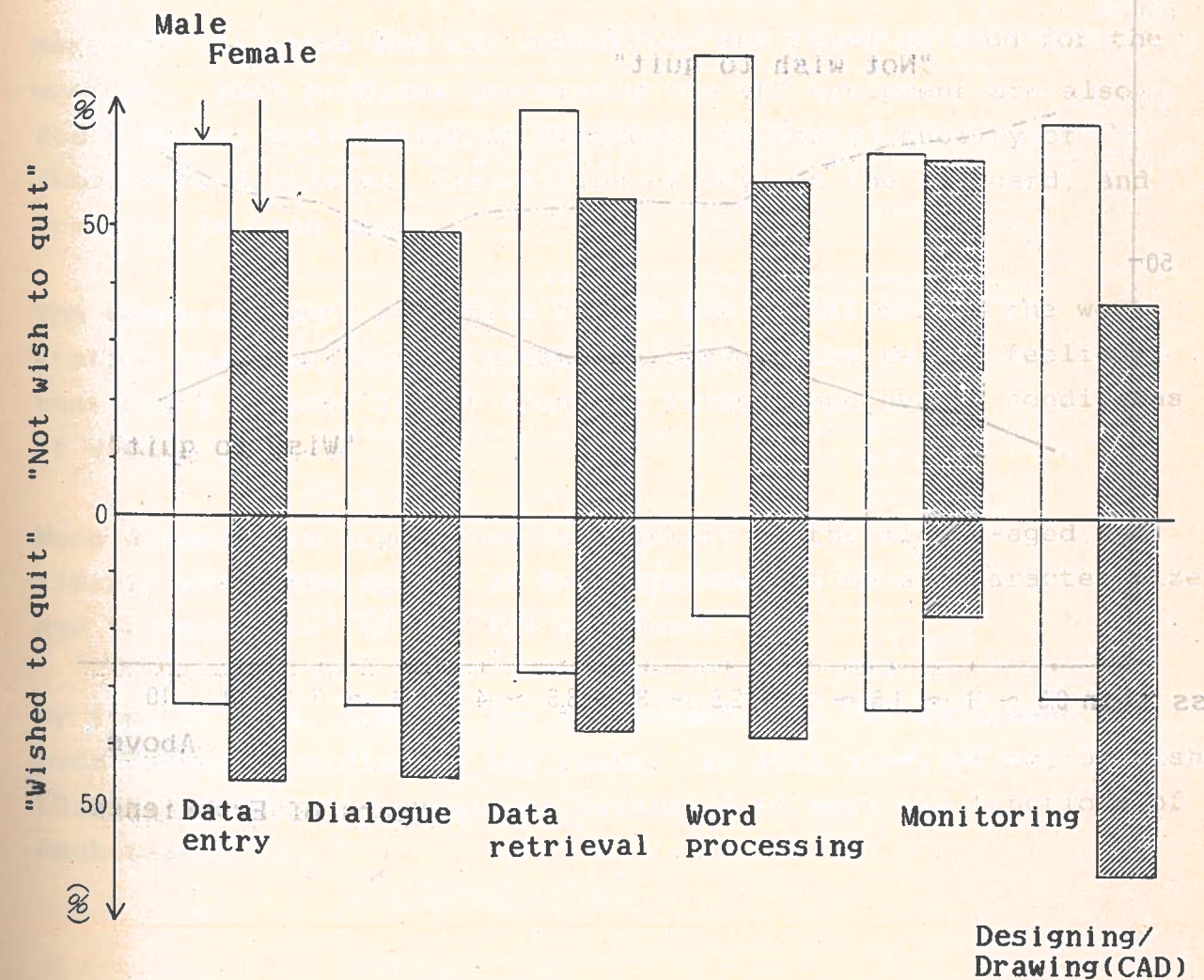
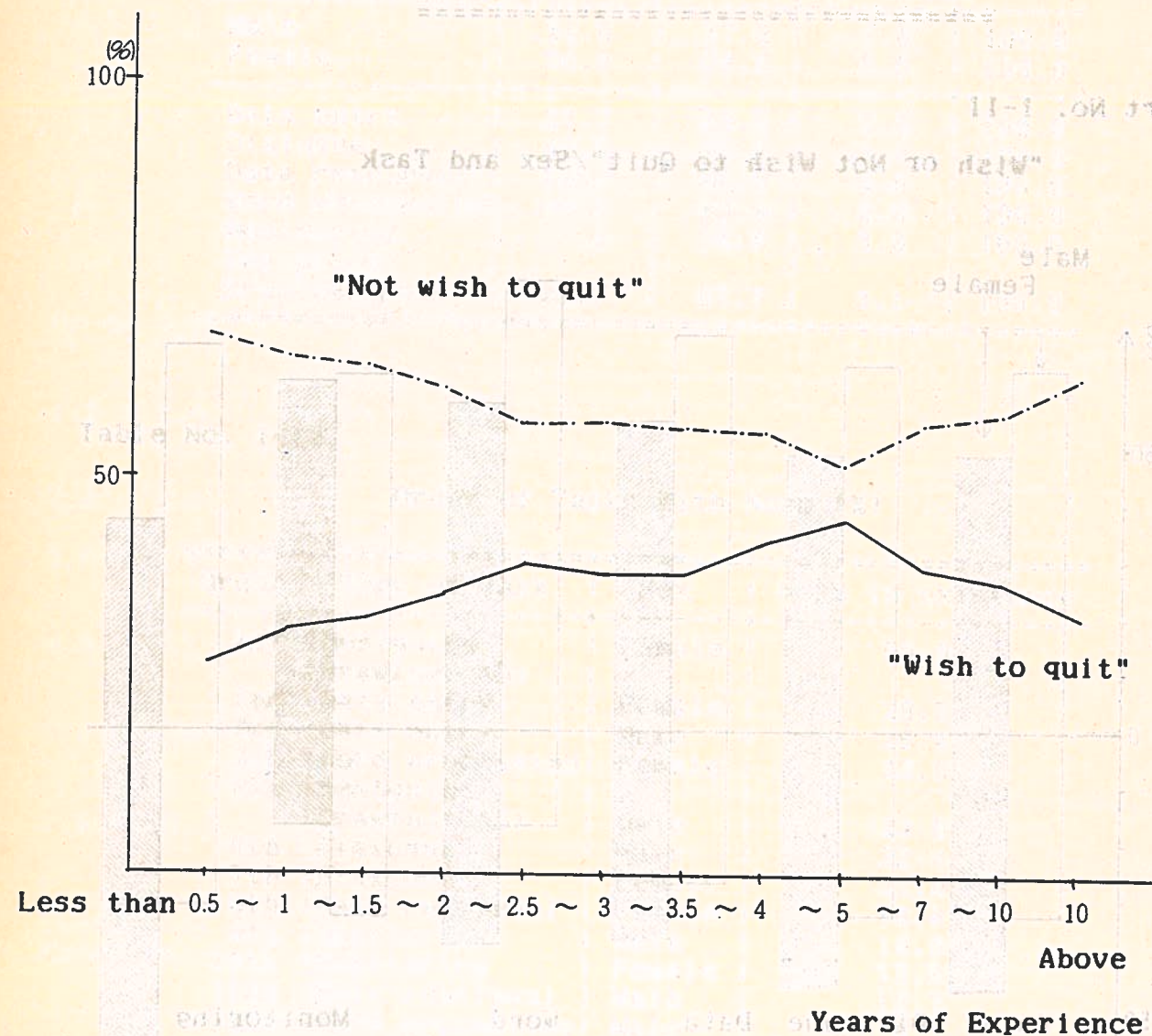


Chart No. 1-12

Wish or Not Wish to Quit /Years of Experience



CHAPTER II - Working Environment And Layout

It seems true that this survey has found it clearly that the working environment, for example the office environment, has remained unchanged at all, inspite of the Office Automation (OA) in progress. Even though a separate VDT Corner (Workstation) has been set up, a VDT working desk is unfit to a VDT worker, with a little attentions being paid to a chair that goes with the desk.

Within the screen watching work, about 40% is affected by a reduction in the legibility of the VDT display, deteriorating the work by reflections on the screen from the light sources or windows.

Moreover the noise and air conditions are found no good for the workers. Such problems concerning the VDT equipment are also found out as positioning of documents or texts, quality of characters displayed, disposition of keys on the keyboard, and pressure to push keys.

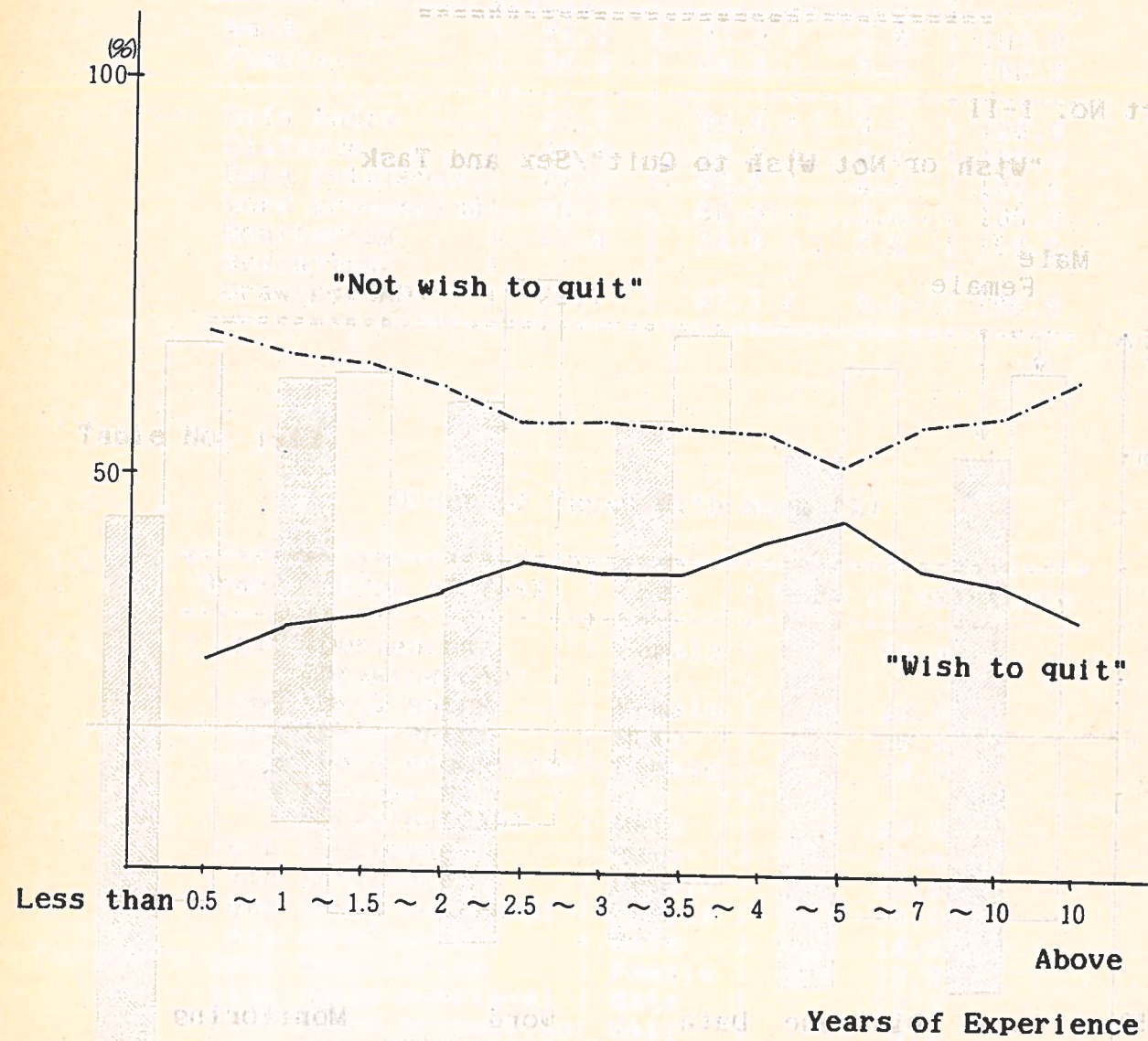
The women are more sensitive to the air conditions in the workstation than men, with a great gap between the two in feelings, that has a serious impact upon the fatigue and health conditions of women.

More demands are urged from the workers of the middle-aged and elderly above the age of 34 for improvements on a "character size" and "screen size" of the VDT equipment.

By type of task, demands for improvements on VDT equipment are much varied according to the tasks. In this view, it may be wished that the VDT devices could be developed to meet the functions of each task.

Chart No. 1-12

Wish or Not Wish to Quit / Years of Experience



CHAPTER II - Working Environment And Layout

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By type of task, demands for improvements on VDT equipment are much varied according to the tasks. In this view, it may be wished that the VDT devices could be developed to meet the functions of each task.

Table No. 2-1

Positioning of VDT Equipment & Conditions of Desk & Chair (%)

	Positioning of VDT			Desk space	
	On desk	VDT corner workstation	Separate workstation for VDT	Sufficient	Insufficient
Average (12,121)	16.5	57.5	25.4	30.4	66.7
Male (7,368)	14.9	57.2	27.5	29.3	68.7
Female (4,489)	19.0	58.7	22.1	32.7	64.1

	Desk height, adjustable		Chair height, adjustable	
	Yes	No	Yes	No
Average (12,121)	7.8	90.0	68.0	29.6
Male (7,368)	8.4	90.1	68.4	29.9
Female (4,489)	6.6	91.4	68.5	29.1

Chart No. 2-1

VDT Desk (Working Table)

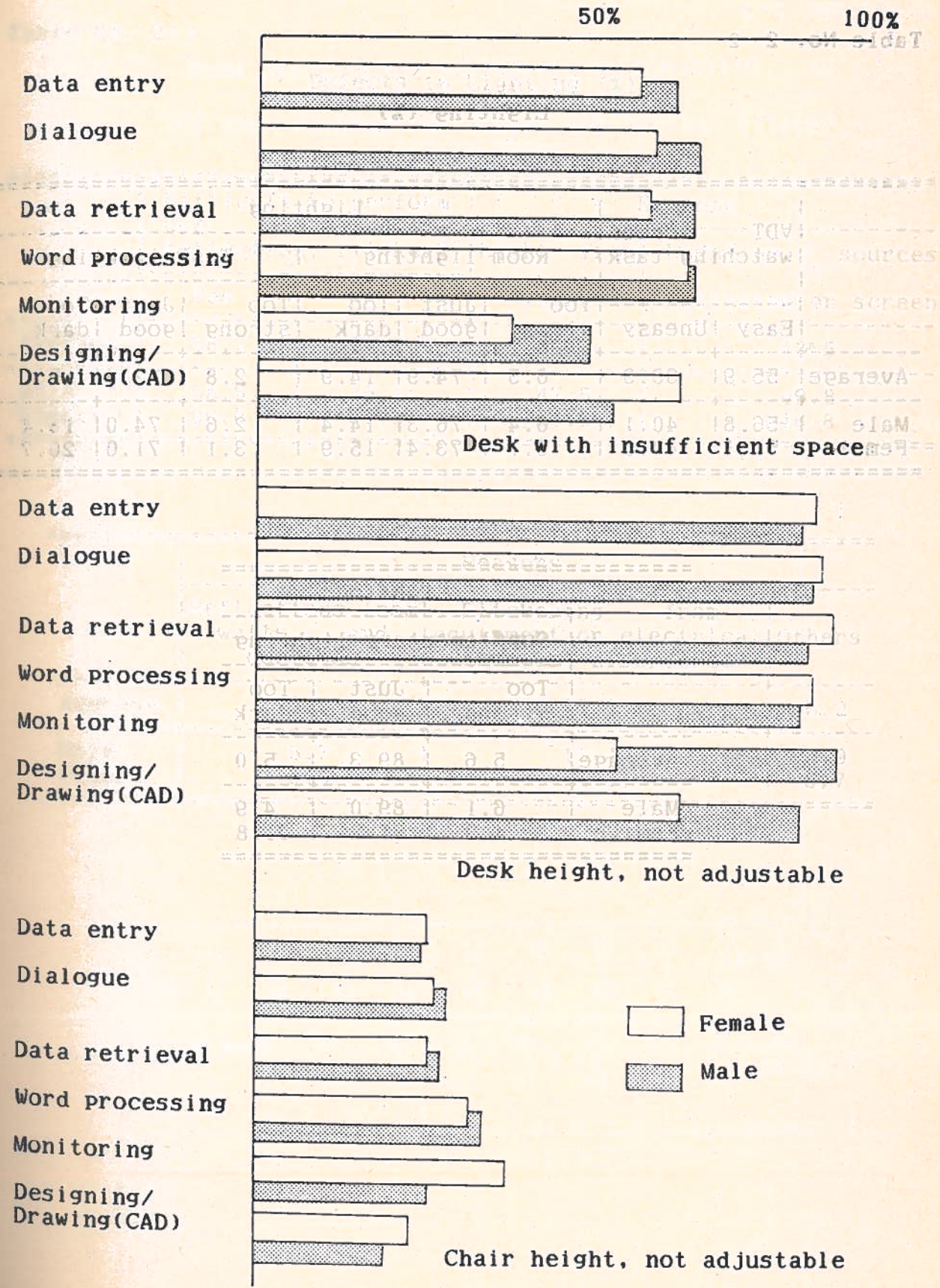


Table No. 2-2

VDT screen watching task	Lighting (%)					
	Room lighting			Task lighting		
Easy	Uneasy	Too strong	Just good	Too dark	Too strong	Just good
Average	55.9	39.9	6.5	74.9	14.9	2.8
Male	56.8	40.1	6.4	76.3	14.4	2.6
Female	55.1	40.0	6.7	73.4	15.9	3.1

Supplementary lighting	Lighting		
	Too strong	Just good	Too dark
Average	5.6	89.3	5.0
Male	6.1	89.0	4.9
Female	4.9	91.2	3.8

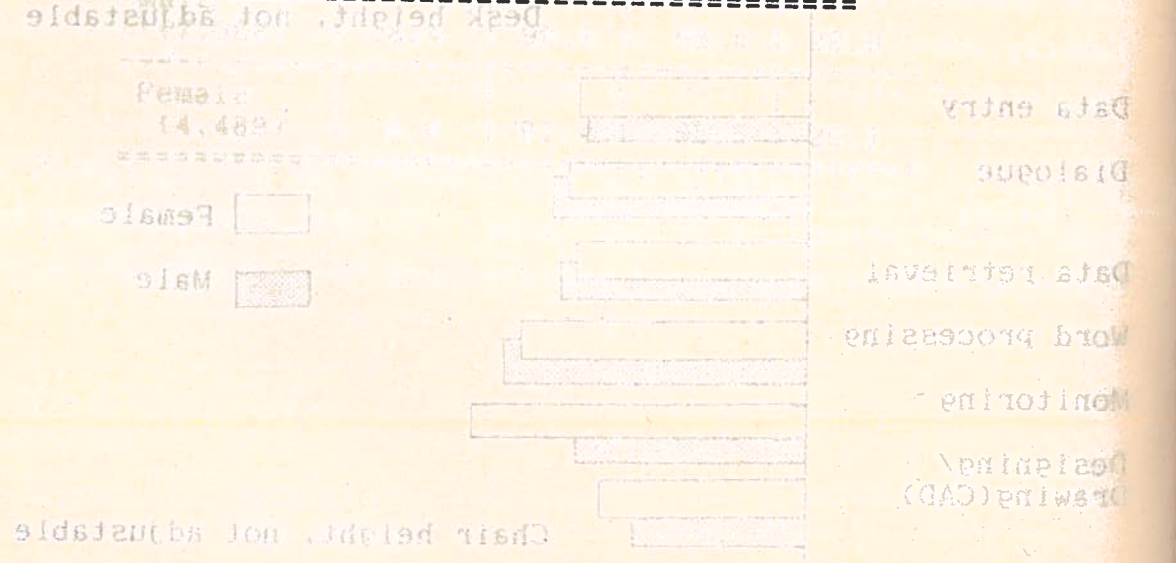


Table No. 2-3

Defects in Lighting (%)

Difficult to perform due to reflection, flicker?	Reasons			
	Yes	No	Light from windows	Lighting reflected on screen
Average	58.7	39.0	49.1	48.5
Male	58.5	40.1	47.5	49.8
Female	60.0	37.3	51.8	46.8

Reflections from walls and curtains	Reasons		
	Flickering from equipment or electrical sources	disordered	Others
Average	5.7	15.0	5.2
Male	5.7	15.4	4.9
Female	5.6	14.3	5.7

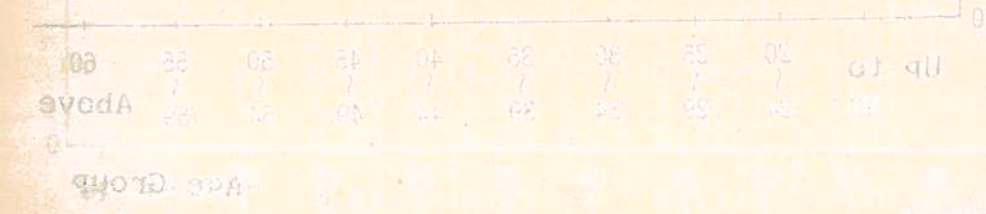


Chart No. 2-2

Difficulties in VDT Screen Watching Work

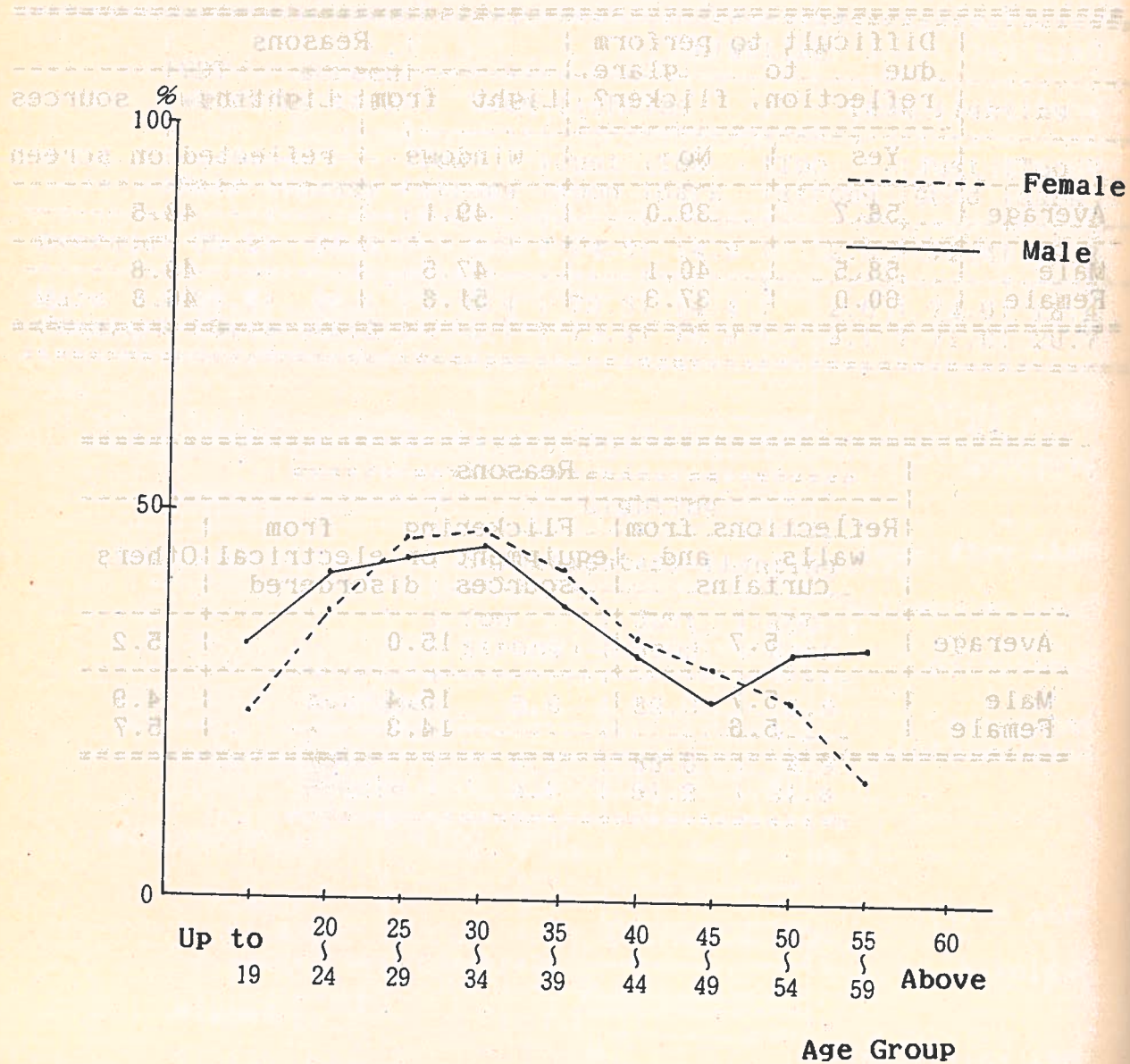


Chart No. 2-3

VDT Work Bothered By Glare, Perfection, Flicker /Age Group

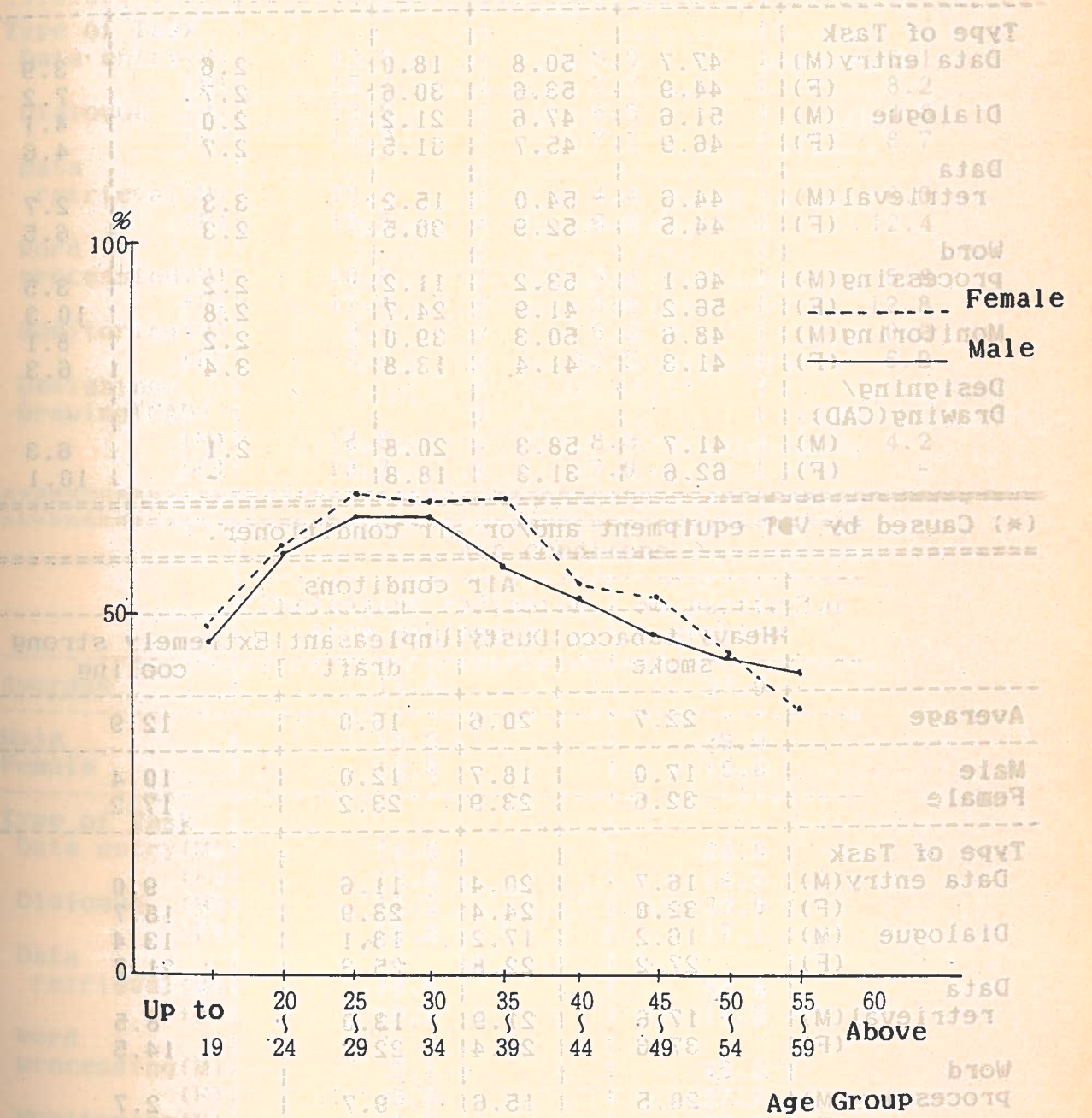


Table No. 2-4.
Noise, Air and Number of Workers in VDT Workstation

	Noise(*)		Air conditons		
	Too noisy/ Noisy	Not bothered	Too dried	Dissatisfactory Humidity	Smelling
Average	47.3	50.6	22.6	2.5	4.9
Male	48.1	50.6	18.8	2.4	3.9
Female	47.0	50.9	29.4	2.7	6.7
Type of Task					
Data entry(M)	47.7	50.8	18.0	2.6	3.9
(F)	44.9	53.6	30.6	2.7	7.2
Dialogue (M)	51.6	47.6	21.2	2.0	4.1
(F)	46.9	45.7	31.5	2.7	4.6
Data retrieval(M)	44.6	54.0	15.2	3.3	2.7
(F)	44.5	52.9	30.5	2.3	6.5
Word processing(M)	46.1	53.2	11.2	2.2	3.5
(F)	56.2	41.9	24.7	2.8	10.3
Monitoring(M)	48.6	50.3	39.0	2.2	8.1
(F)	41.3	41.4	13.8	3.4	6.3
Designing/ Drawing(CAD)					
(M)	41.7	58.3	20.8	2.1	6.3
(F)	62.6	31.3	18.8	-	10.1

(*) Caused by VDT equipment and/or air conditioner.

	Air conditons			
	Heavy tobacco smoke	Dusty	Unpleasant draft	Extremely strong cooling
Average	22.7	20.6	16.0	12.9
Male	17.0	18.7	12.0	10.4
Female	32.6	23.9	23.2	17.2
Type of Task				
Data entry(M)	16.7	20.4	11.6	9.0
(F)	32.0	24.4	23.9	18.7
Dialogue (M)	16.2	17.2	13.1	13.4
(F)	27.2	22.8	25.3	21.7
Data retrieval(M)	17.6	21.9	13.0	8.5
(F)	37.6	24.4	22.2	14.5
Word processing(M)	20.5	15.6	9.7	2.7
(F)	34.0	21.8	22.4	12.5
Monitoring(M)	15.4	14.0	9.8	24.2
(F)	13.8	24.1	6.9	10.3
Designing/ Drawing(CAD)				
(M)	25.0	10.0	8.3	10.2
(F)	25.0	12.5	25.0	37.5

Table No. 2-4 (Cont'd.)
Noise, Air and Number of Workers in VDT Workstation

	Air conditons		
	Inefficient cooling	Extremely strong heating	Inefficient heating
Average	13.6	5.6	6.9
Male	12.5	5.0	5.3
Female	15.6	7.0	9.7
Type of Task			
Data entry(M)	12.6	5.0	5.1
(F)	15.4	7.7	8.2
Dialogue (M)	13.5	5.5	4.8
(F)	13.3	7.1	8.7
Data retrieval(M)	15.3	4.4	8.0
(F)	15.5	6.3	12.4
Word processing(M)	10.9	3.4	5.8
(F)	17.4	3.4	12.8
Monitoring(M)	3.4	6.2	0.8
(F)	3.4	12.5	6.9
Designing/ Drawing(CAD)			
(M)	18.8	8.3	4.2
(F)	18.7	7.0	-

	Air conditons	
	Unpleasant radiation from equipment	No particular problem
Average	11.0	27.0
Male	10.5	35.0
Female	12.0	15.8
Type of Task		
Data entry(M)	11.6	34.0
(F)	12.6	14.5
Dialogue (M)	11.2	33.9
(F)	12.8	17.1
Data retrieval(M)	10.5	34.4
(F)	12.2	14.5
Word processing(M)	5.1	45.9
(F)	8.9	22.2
Monitoring(M)	8.7	30.9
(F)	13.8	17.2
Designing/ Drawing(CAD)		
(M)	10.4	31.3
(F)	11.5	12.5

Table No. 2-4 (Cont'd.)

Noise, Air and Number of Workers in VDT Workstation

	No. of workers per workstation		
	Too many	Just good	Too few
Average	34.1	55.9	5.1
Male	33.8	56.4	6.1
Female	35.1	56.3	3.6
Type of Task			
Data entry (M)	33.6	57.0	6.4
(F)	34.2	57.9	3.5
Dialogue (M)	37.9	53.3	5.5
(F)	33.4	58.2	3.3
Data retrieval (M)	34.9	53.1	6.9
(F)	39.7	50.1	5.1
Word processing (M)	34.7	56.4	5.4
(F)	36.1	56.0	2.4
Monitoring (M)	12.4	79.5	6.2
(F)	10.3	48.3	13.8
Designing/ Drawing (CAD) (M)	22.9	64.6	8.3
(F)	31.3	68.8	-

Chart No. 2-4

Air Conditions in VDT Workstation (For Male, Female, Average)

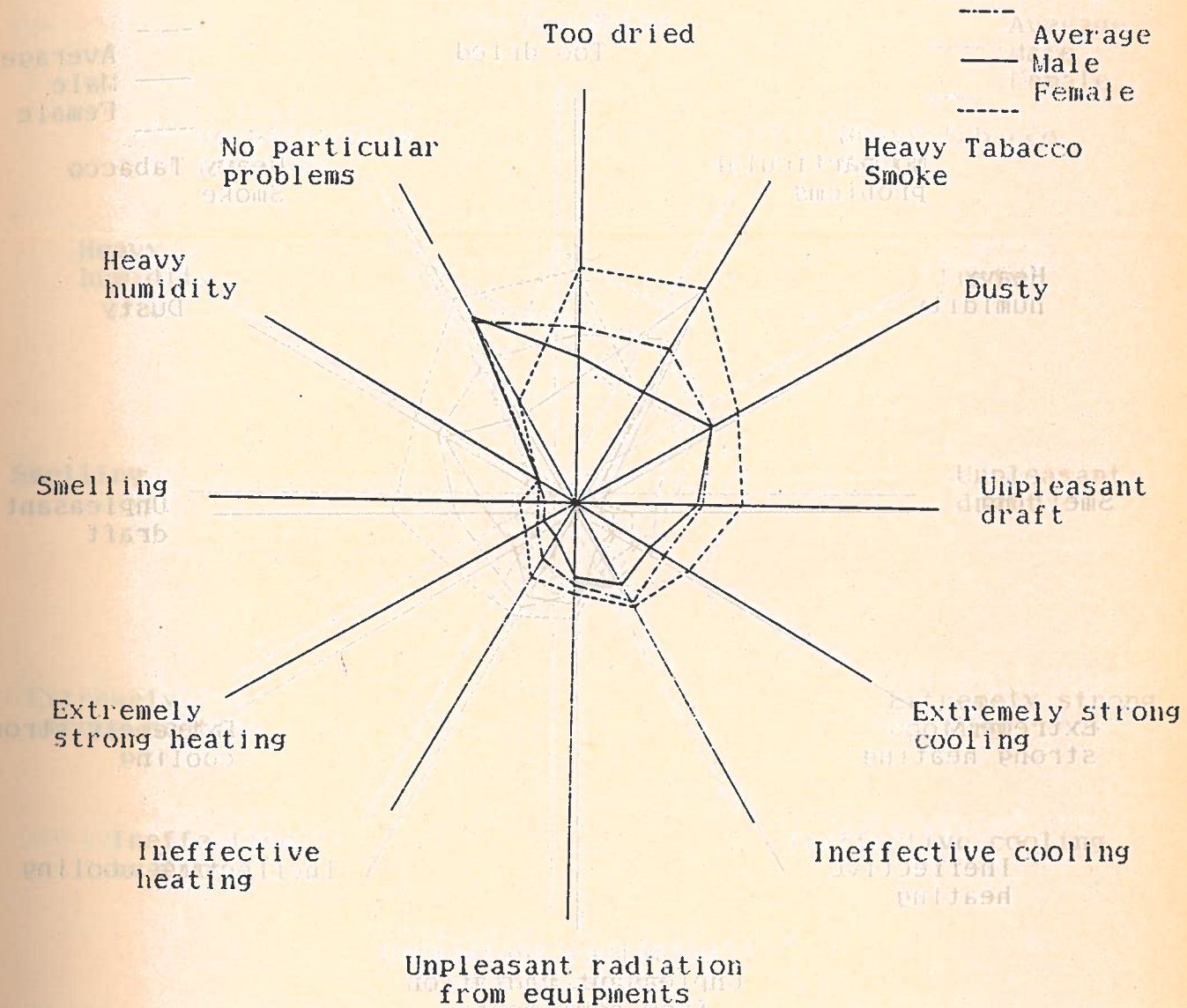


Chart No. 2-5

Air Conditions in VDT Workstation
(For Workers on Data Entry)

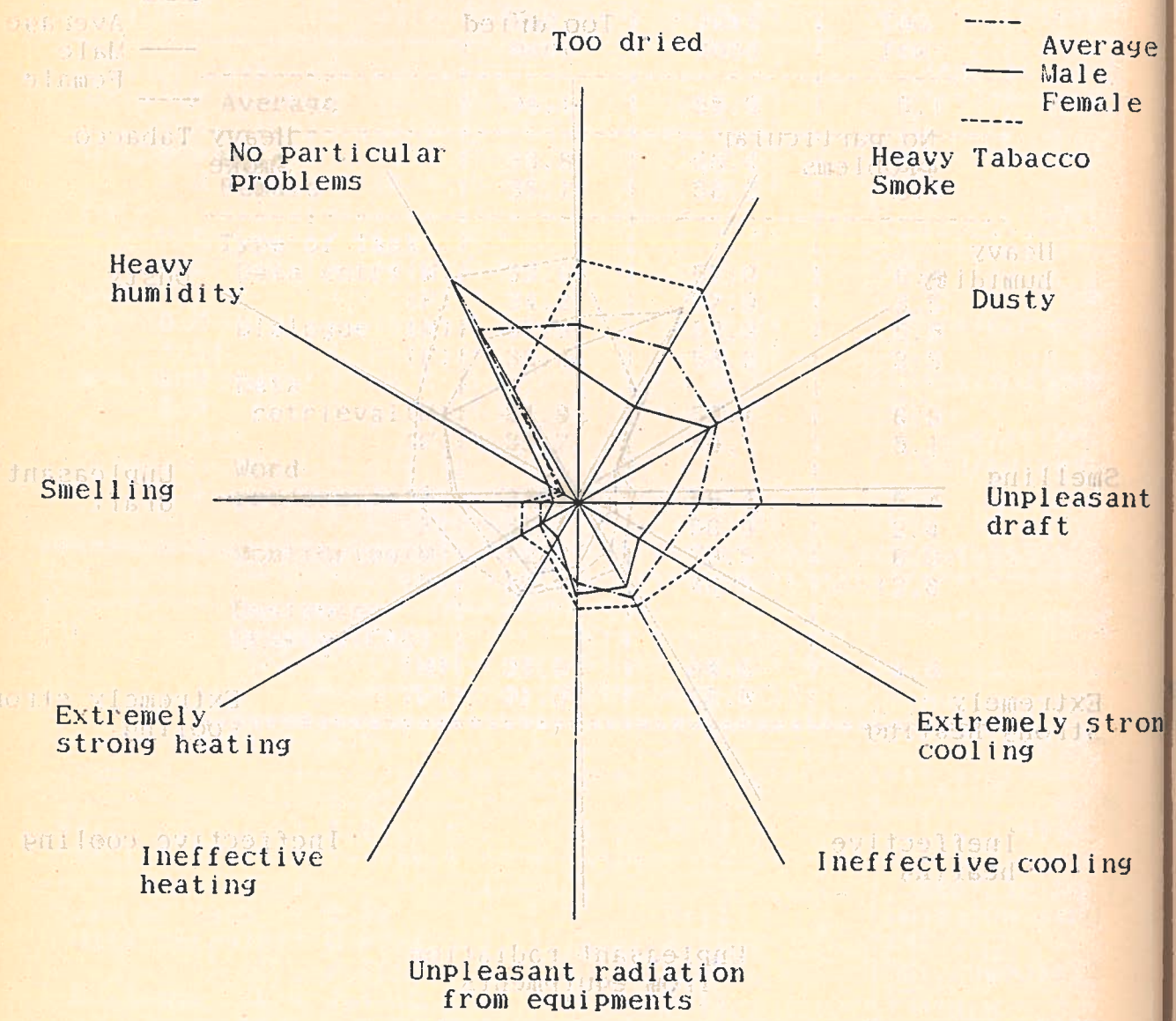


Chart No. 2-6

Air Conditions in VDT Workstation
(For Workers on Dialouge)

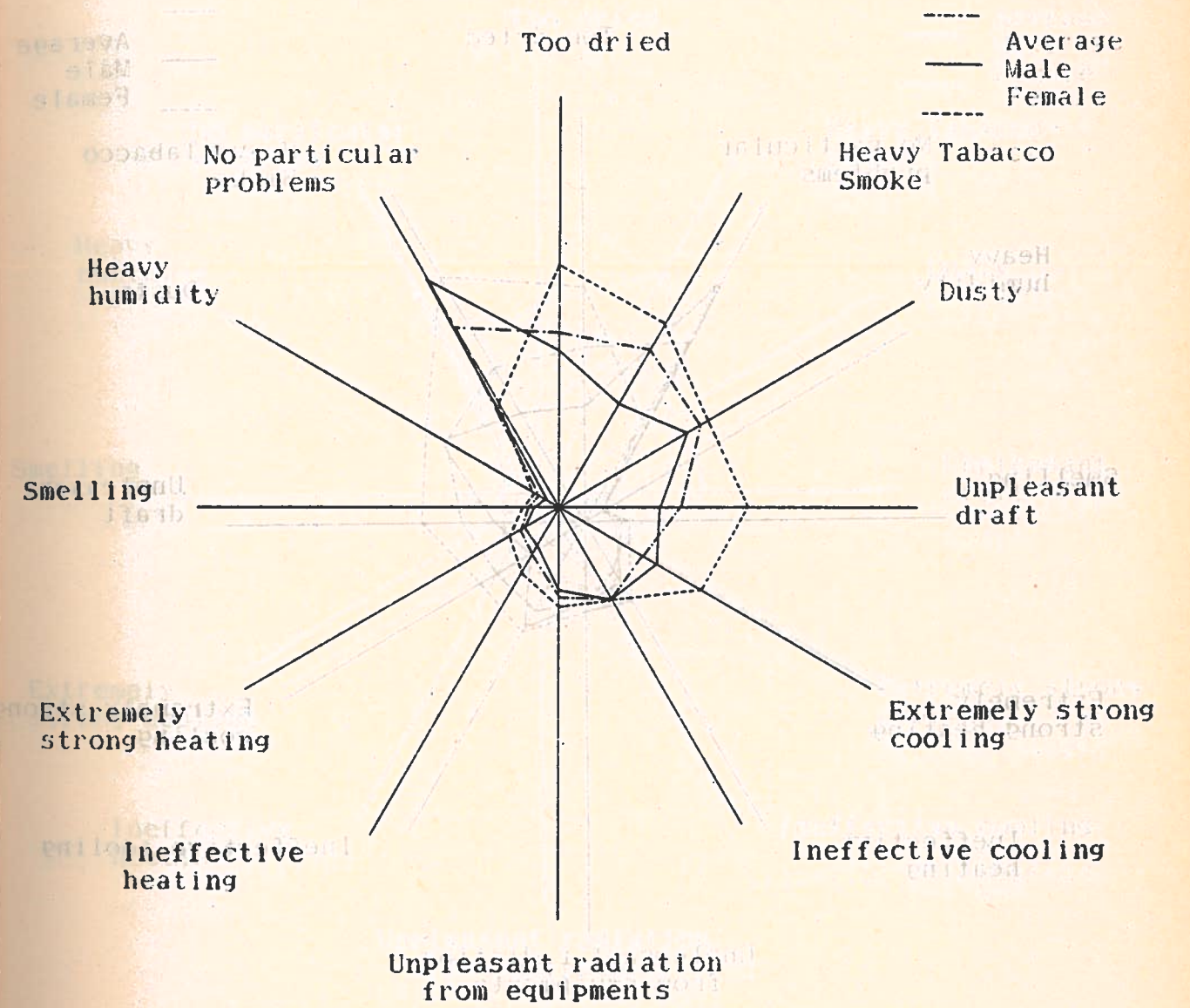


Chart No. 2-7

Air Conditions in VDT Workstation
(For Workers on Data Retrieval)

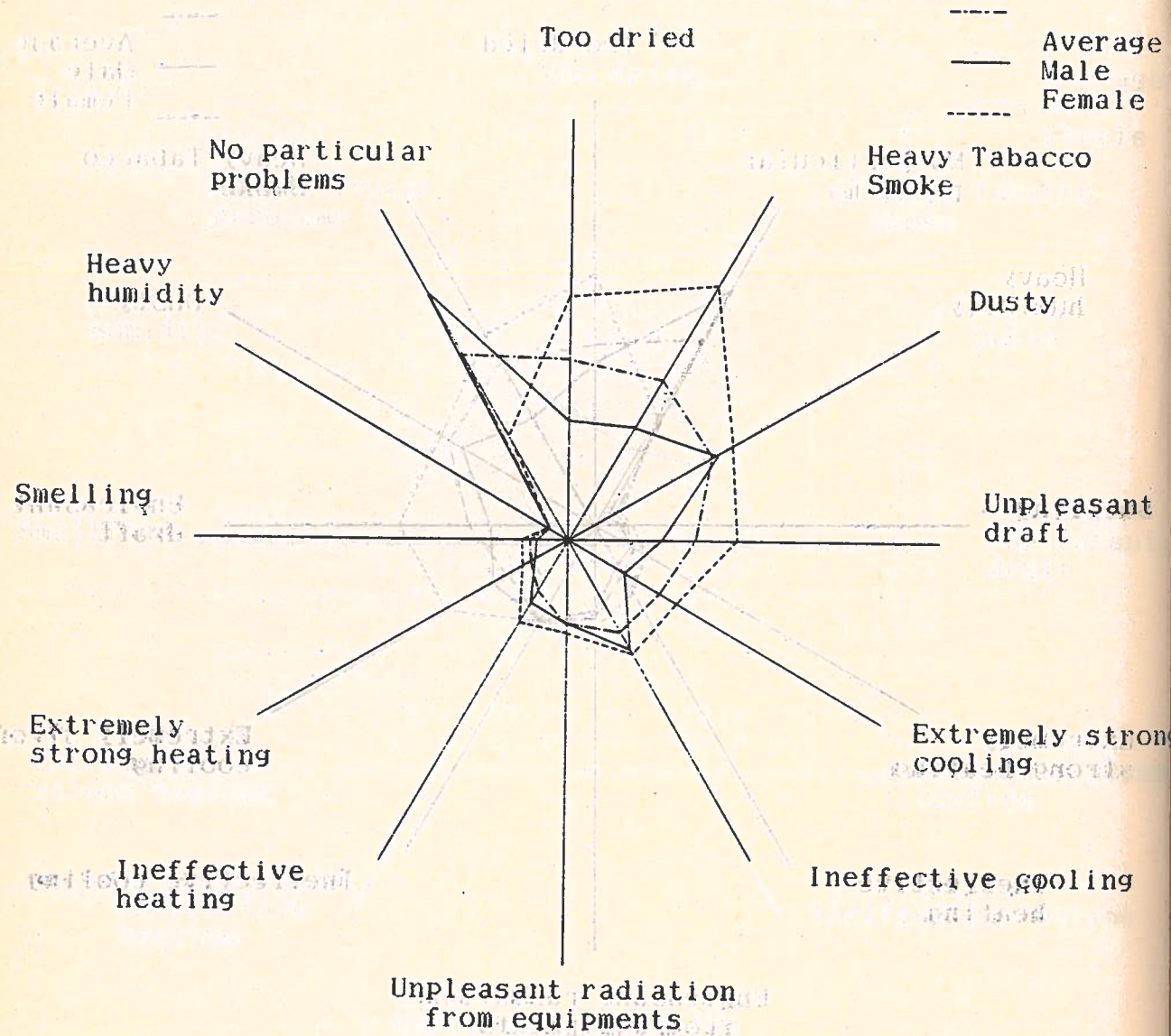


Chart No. 2-8

Air Conditions in VDT Workstation
(For Workers on Word Preprocessing)

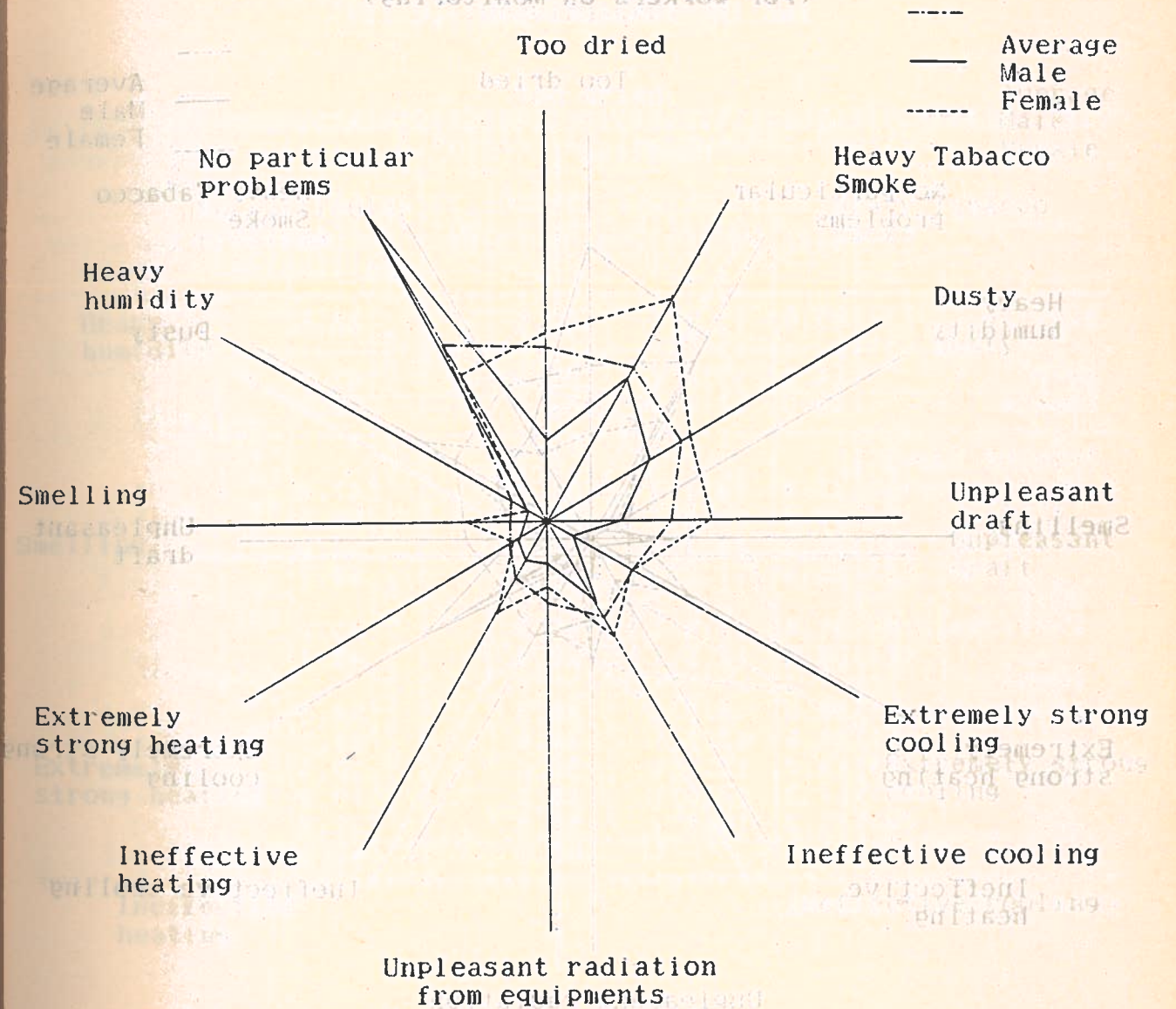


Chart No. 2-9

Air Conditions in VDT Workstation
(For Workers on Monitoring)

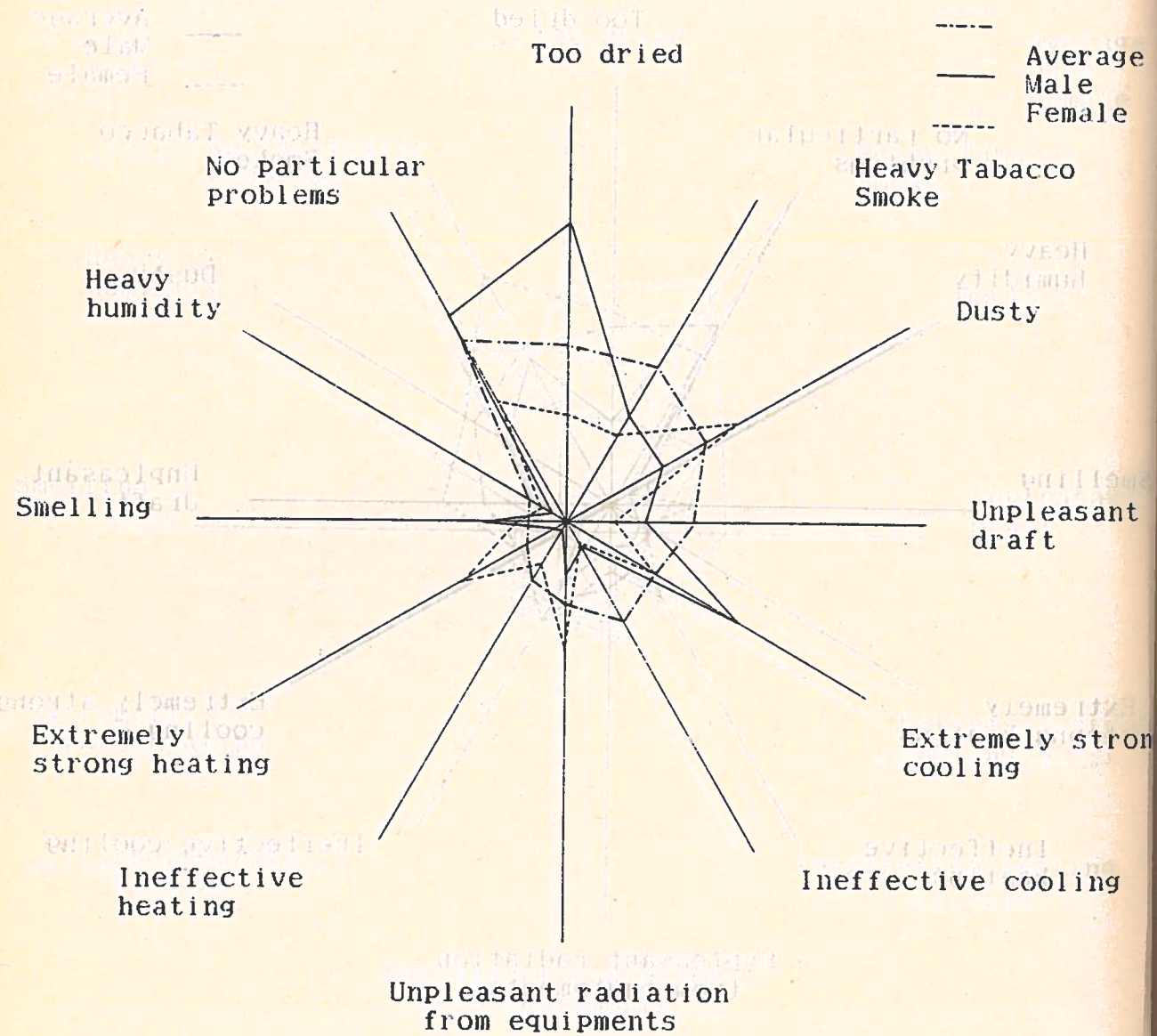


Chart No. 2-10

Air Conditions in VDT Workstation
(For Workers on Designing / Drawing (CAD))

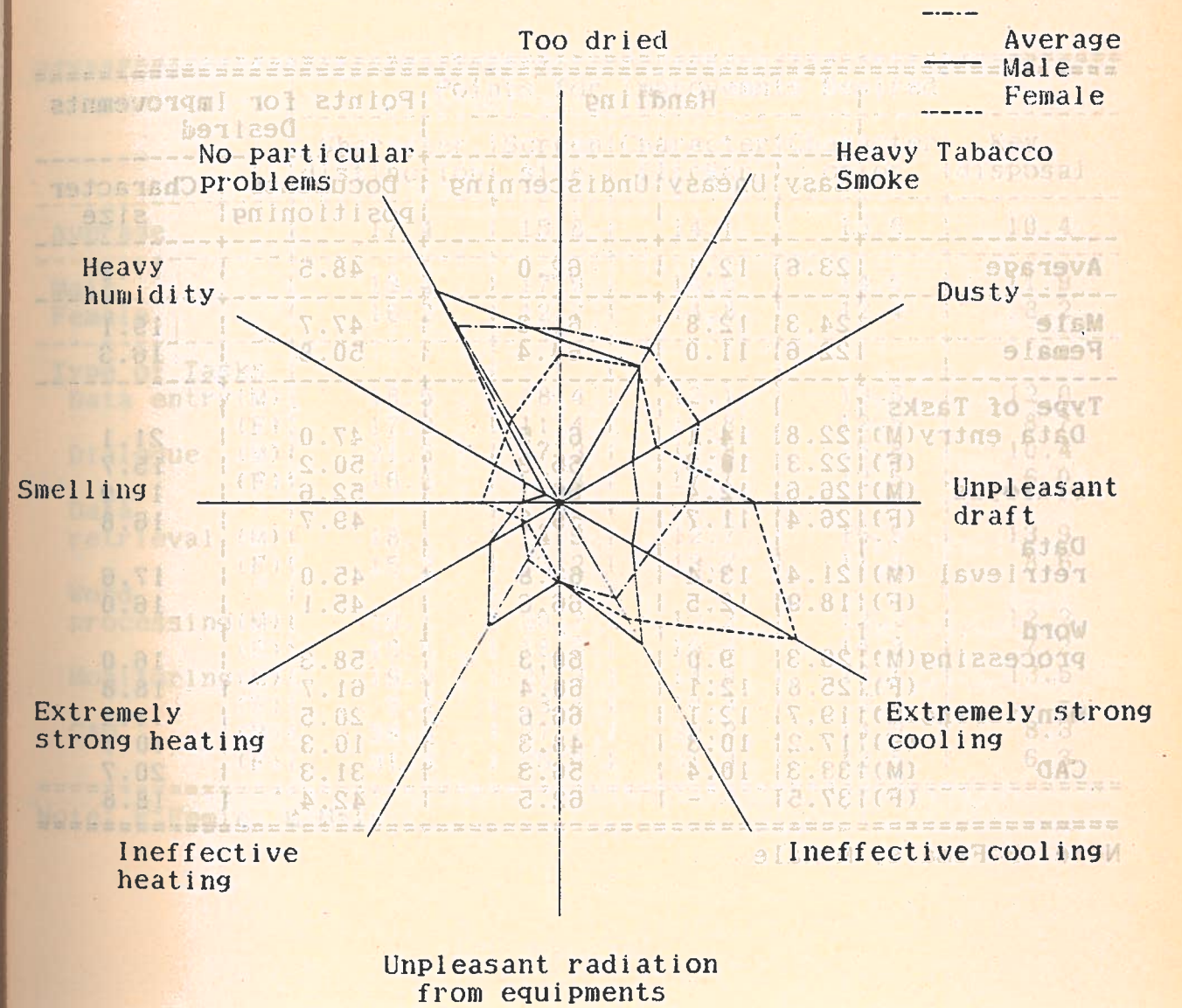


Table No. 2-5

Handling of VDT Equipment & Points for Improvements Desired (%)

	Handling			Points for Improvements Desired	
	Easy	Uneasy	Undiscerning	Documents positioning	Character size
Average	23.6	12.1	62.0	48.5	17.9
Male	24.3	12.8	61.3	47.7	19.1
Female	22.6	11.0	64.4	50.8	16.3
Type of Tasks					
Data entry (M)	22.8	14.1	61.5	47.0	21.1
(F)	22.3	10.3	65.9	50.2	15.7
Dialogue (M)	26.6	12.4	60.1	52.6	16.9
(F)	26.4	11.7	59.0	49.7	16.8
Data retrieval (M)	21.4	13.4	63.8	45.0	17.6
(F)	18.9	12.5	66.6	45.1	16.0
Word processing (M)	29.3	9.0	60.3	58.3	16.0
(F)	25.8	12.1	60.4	61.7	18.8
Monitoring (M)	19.7	12.1	66.6	20.5	19.4
(F)	17.2	10.3	48.3	10.3	10.3
CAD (M)	33.3	10.4	56.3	31.3	20.7
(F)	37.5	-	62.5	42.4	18.8

Note: F:Female, M:Male

Table No. 2-5 (Cont'd.)

Handling of VDT Equipment & Points for Improvements Desired (%)

	Points for Improvements Desired				
	Character distinction	Screen size	Character flicker	Character color	Key disposal
Average	17.4	15.8	14.1	13.6	10.4
Male	18.4	17.9	14.0	14.5	11.9
Female	16.2	12.7	14.8	12.4	8.2
Type of Tasks					
Data entry (M)	18.5	18.4	12.1	13.6	12.0
(F)	17.2	11.4	13.8	12.5	8.7
Dialogue (M)	21.3	17.3	17.8	15.8	10.4
(F)	16.8	9.8	17.1	12.5	6.0
Data retrieval (M)	18.1	14.9	12.7	15.5	13.9
(F)	15.2	13.2	13.7	11.2	8.6
Word processing (M)	10.1	20.7	12.2	12.2	12.2
(F)	13.5	18.3	19.4	14.3	7.2
Monitoring (M)	19.9	21.3	14.0	17.1	13.5
(F)	3.4	3.4	10.3	3.4	-
CAD (M)	20.8	27.1	22.9	14.6	8.3
(F)	31.3	25.0	31.3	12.5	6.3

Note: F:Female, M:Male

Table No. 2- 5 (Cont'd.)

Handling of VDT Equipment & Points
for Improvements Desired (%)

Points for Improvemnts Desired					
	Character light	Key force	Arm holder	Character/ Line space	Others
Average	9.1	8.9	8.1	6.4	20.1
Male	9.0	7.9	7.8	5.9	19.3
Female	9.3	10.8	8.5	7.2	19.8
Type of Tasks					
Data entry(M)	9.6	8.8	7.8	5.9	19.0
(F)	9.5	13.8	9.5	6.3	18.5
Dialogue (M)	9.5	7.9	8.8	4.8	17.8
(F)	6.8	7.3	7.3	5.2	23.9
Data retrieval (M)	8.4	6.9	7.6	6.5	19.9
(F)	11.0	3.8	7.6	7.1	25.2
Word processing(M)	6.2	4.6	7.7	9.3	15.7
(F)	9.6	7.9	7.9	12.2	14.0
Monitoring(M)	8.4	10.7	4.8	5.3	29.5
(F)	3.4	10.3	-	3.4	6.3
CAD (M)	4.2	4.2	2.1	2.1	22.9
(F)	5.0	12.5	6.3	4.3	29.5

Note: F:Female, M:Male

Chart No. 2-11

Handling of VDT Equipment and Points
for Improvements Desired
(Average, Male and Female)

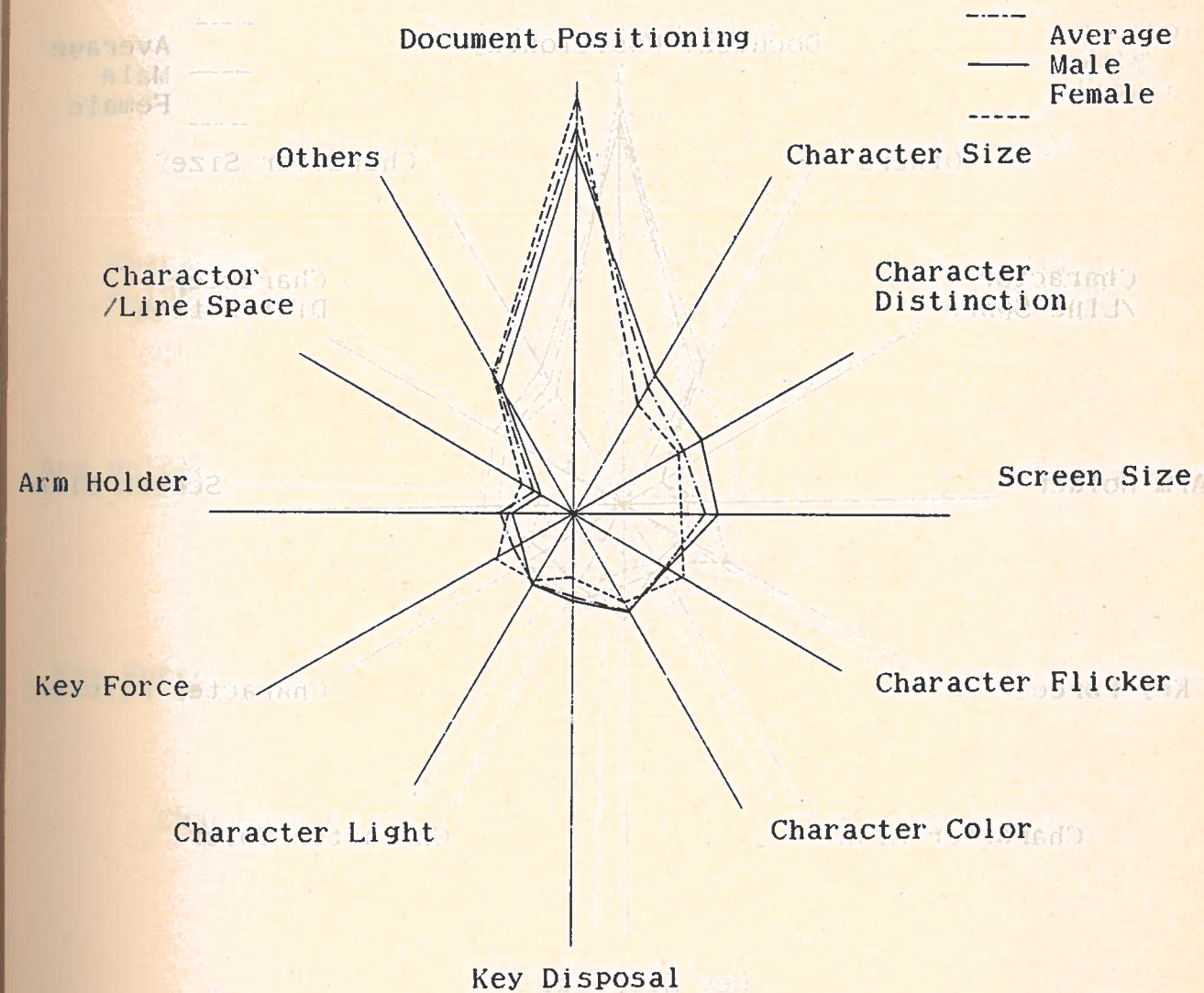


Chart No. 2-12

Handling of VDT Equipment and Points
for Improvements Desired
(For Workers on Data Entry)

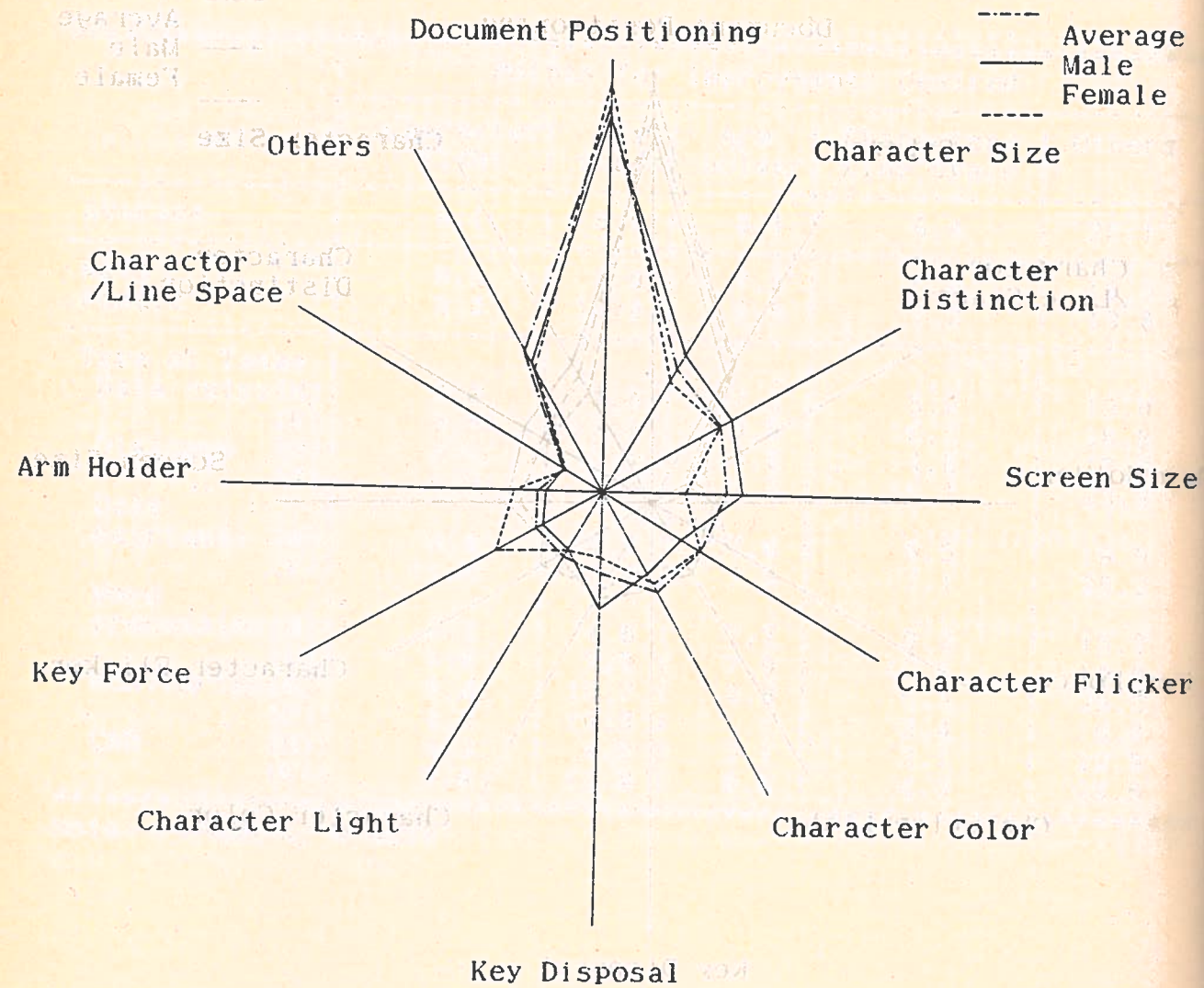


Chart No. 2-13

Handling of VDT Equipment and Points
for Improvements Desired
(For Workers on Dialogue)

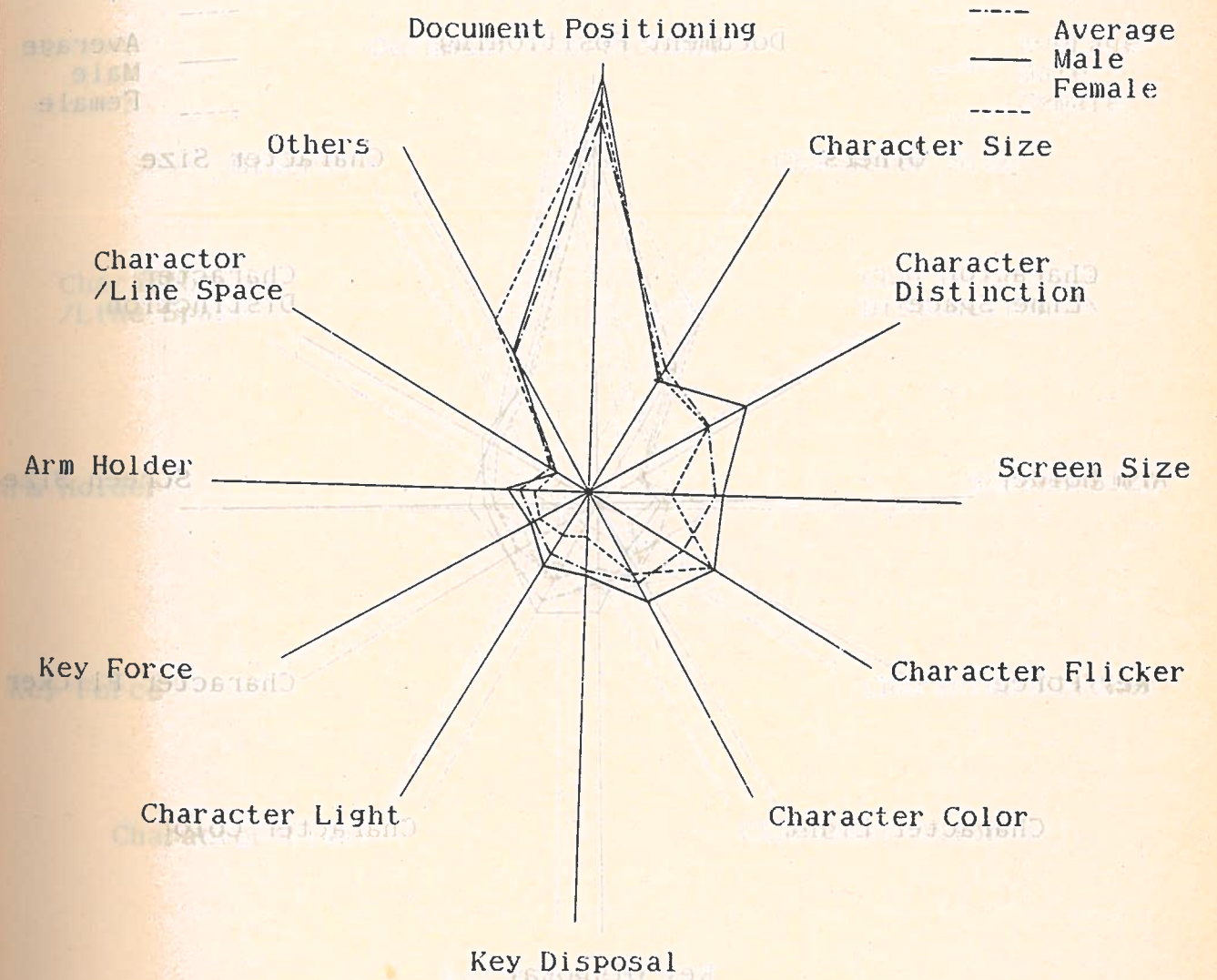


Chart No. 2-14

Handling of VDT Equipment and Points
for Improvements Desired
(For Workers on Data Retrieval)

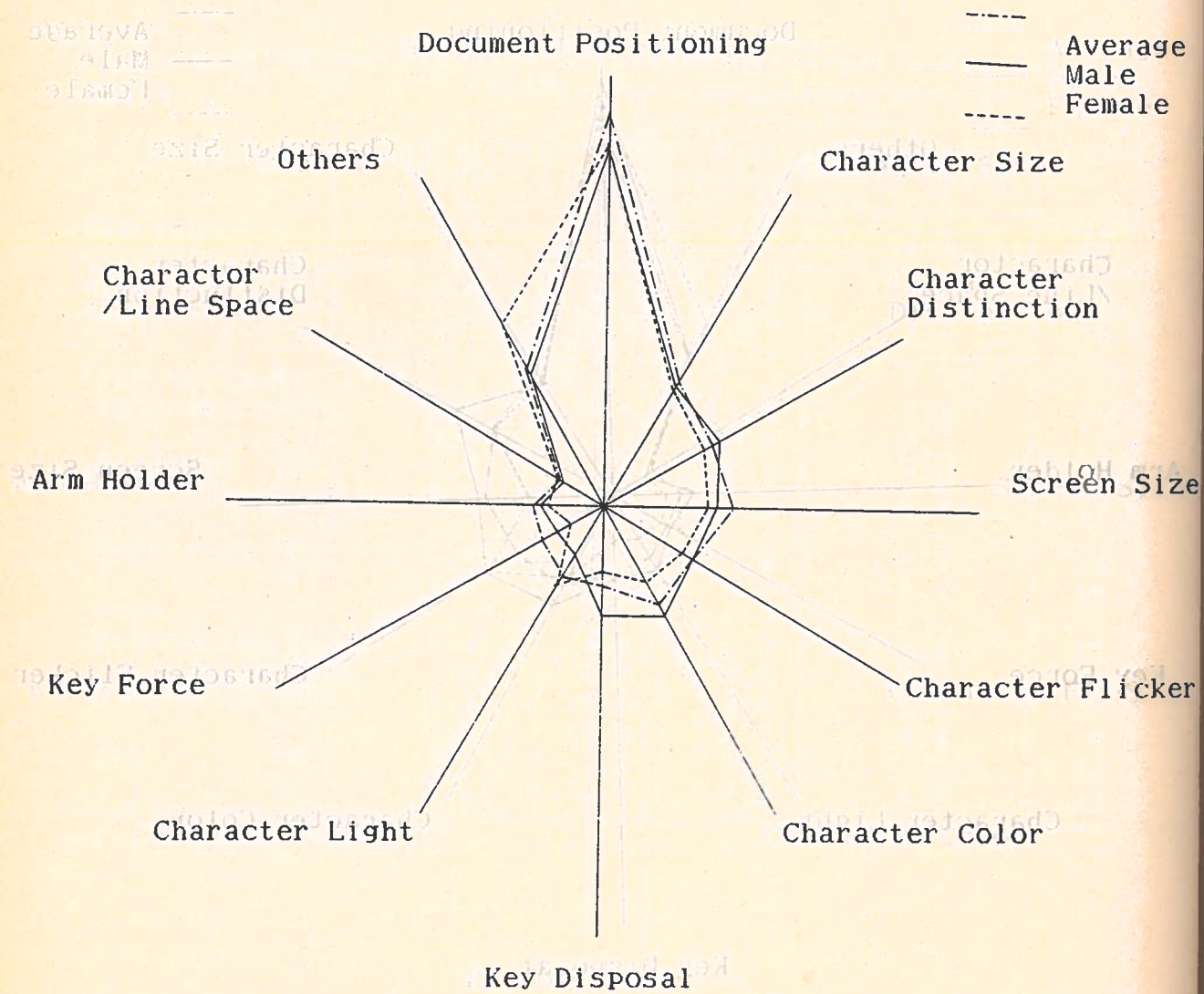


Chart No. 2-15

Handling of VDT Equipment and Points
for Improvements Desired
(For Workers on Word Processing)

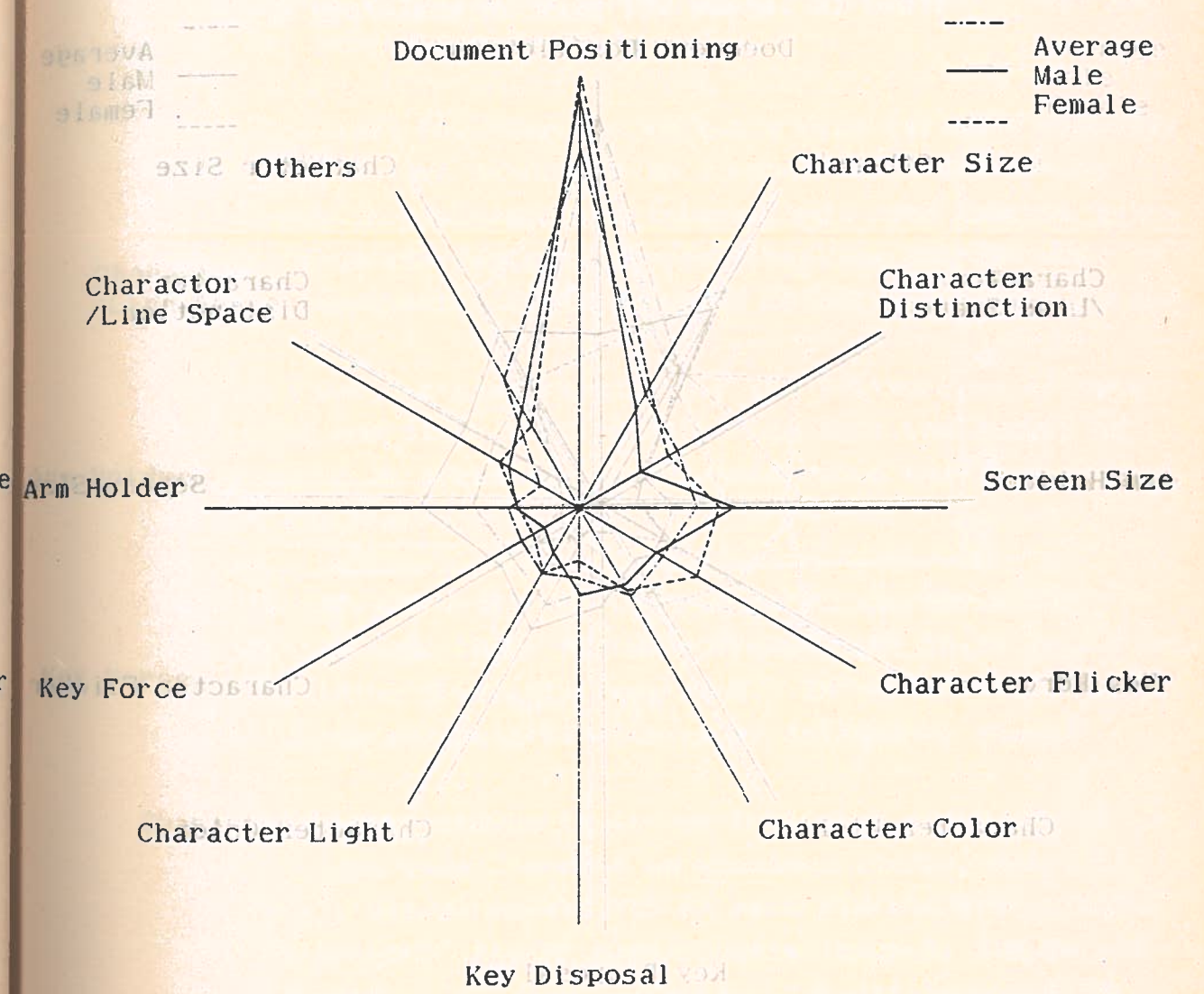


Chart No. 2-16

Handling of VDT Equipment and Points
for Improvements Desired
(For Workers on Monitoring)

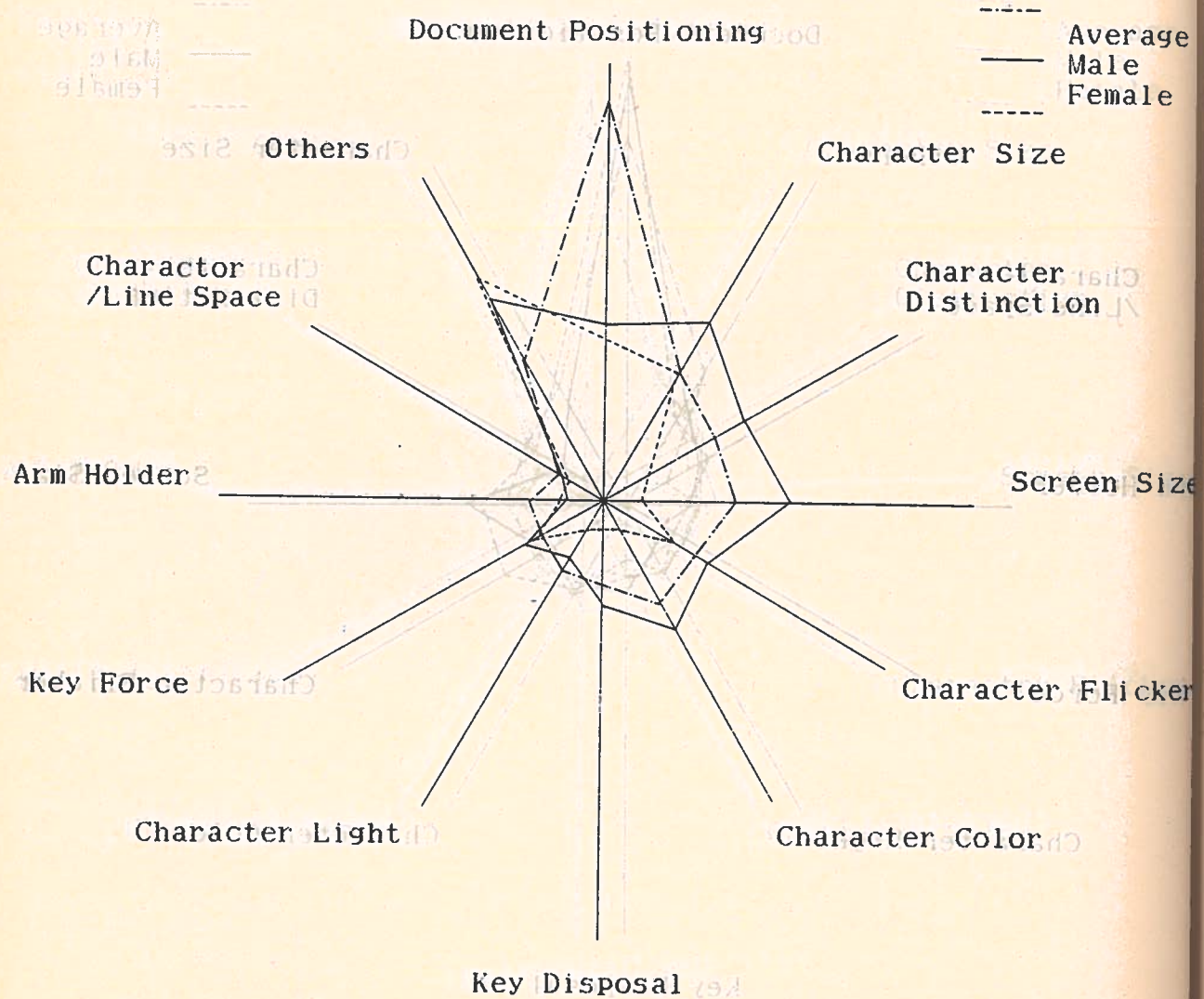


Chart No. 2-17

Handling of VDT Equipment and Points
for Improvements Desired
(For Workers on CAD)

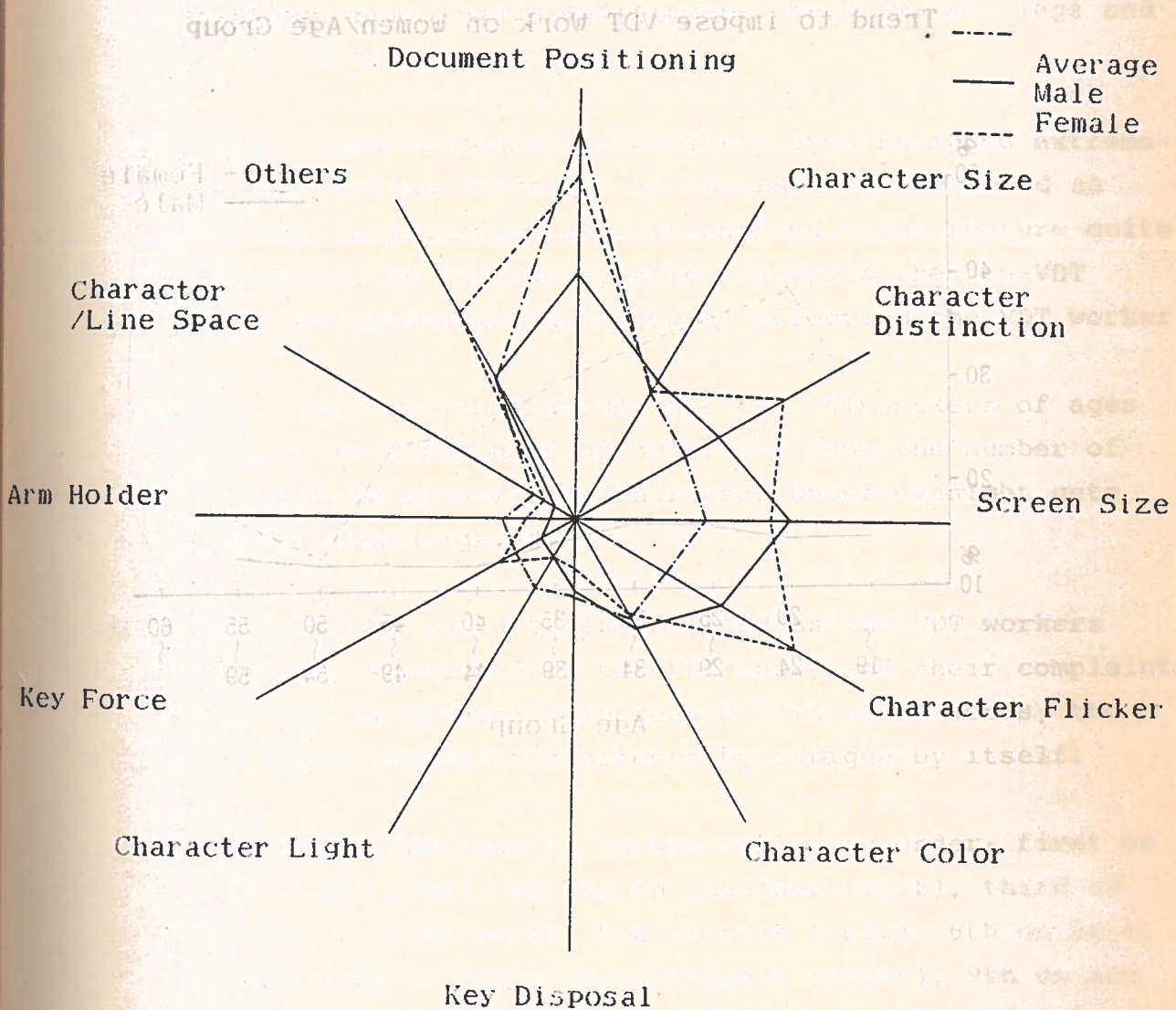
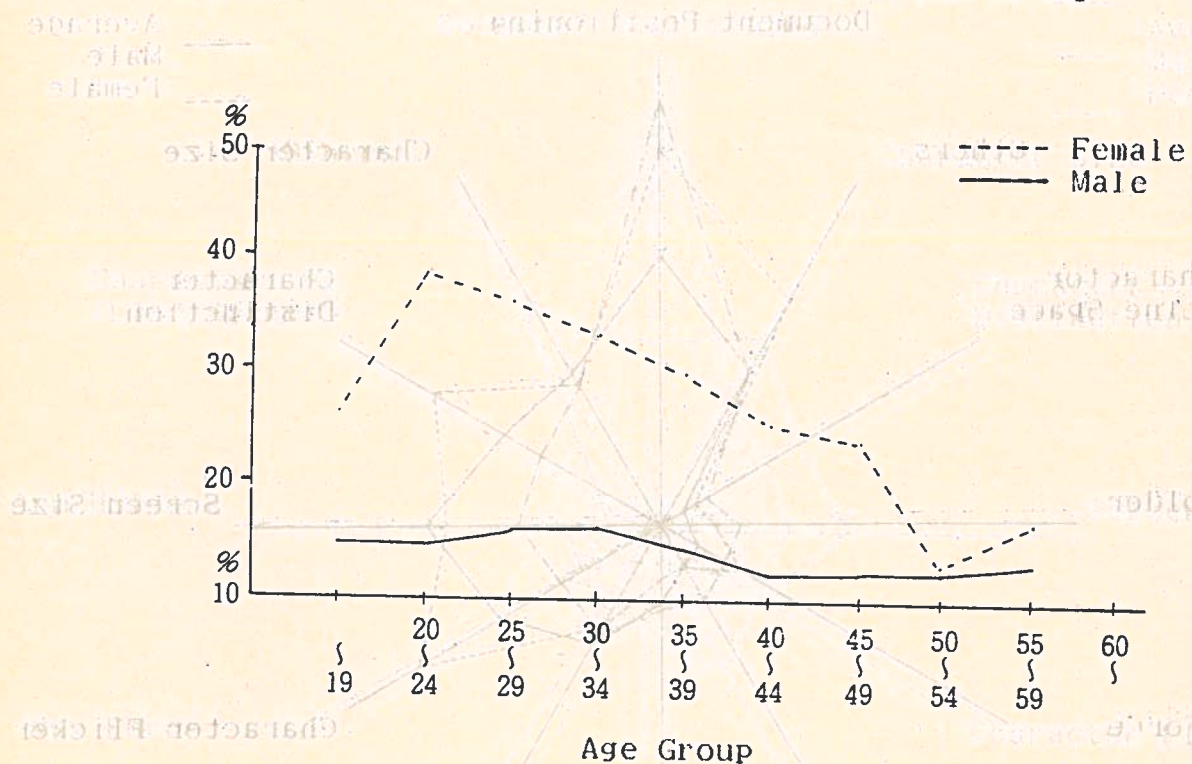


Chart 2-18

Trend to impose VDT Work on Women/Age Group



CHAPTER III - Fatigue Accumulated And Health Eroded

This chapter covers the fatigue caused by VDT work on items of (1) Eyes, (2) Degree of Fatigue, (3) Various Parts of Body (neck, shoulders, arms, hands and fingers, back, waist, legs and feet) and (4) Subjective Symptoms.

1. VDT work is used to cause the worker's eyes fatigued extremely, and the fatigue condition is increasingly worsened as the VDT work is prolonged and intensified. The feature quite different from the fatigue symptom affecting the non-VDT worker is the eyestrain (asthenopia) affecting the VDT worker.
2. Asthenopia would concentratedly hit the VDT workers of ages of 20's and the first half of 30's, and thus the number of workers would be drastically increased whose eyesight gets worsened and near-sighted.
3. Degree of fatigue would be intensified as the VDT workers gain years of experience in the VDT work, and their complaints as such would be gradually increased. In other words, the VDT work bears accumulated effects by fatigue by itself.
4. The spots hit by fatigue is in the following order; first on shoulder (right side), second on shoulder (left), third on neck (right), 4th on waist, 5th on neck (left), 6th on back, 7th on arm (right), 8th on hand/fingers (right), 9th on arm (left) and 10th on leg/foot (right). Complaints about fatigue on these spots would be increased as the VDT working time is prolonged. Moreover it is found evident that the continued VDT work to keep the worker in a unnatural posture would cause an extreme fatigue upon his (her) shoulders, neck and arms.

5. Stronger complaints about the eye symptoms from the VDT workers are raised due to such tasks as listed in the following order; first the CAD task, second the word processing, third the data entry, 4th the dialogue, 5th the data retrieval, and 6th the monitoring. The worst is found in the first task performed by women.
6. The most complaints about eye symptoms corrected with their employment status, are raised from the VDT workers dispatched outside on contract, or those in the lent-a-worker status. The employment pattern of this kind is now increasingly practised, posing a serious problems over their safety and health in the light of the increasing grievances over their fatigue caused by the VDT work.
7. Subjective symptoms over the fatigue show a gap between men and women workers in respect to their consciousness of such symptoms. Men are prone to be fatigued with mental burdens while women with operational (mechanical) burdens in respect the fatigue mechanism.
8. Comparing the group of non-VDT workers, the group of VDT workers has not yet been marked by any characteristic symptoms but for those with their eyes, probably because the VDT workers are rather comprising the younger people with shorter experience periods of the VDT work, while the survey indicate the necessity of significant preventive measures against any dangers or threats to be caused by the VDT work in future to their health and safety.
9. For subjective symptoms concerning the fatigue by employment status, the most complaints are posed inter alia by the VDT workers dispatched outside on contract, or those in the lent-a-worker status.
10. For subjective symptoms of the fatigue by type of tasks complained from the workers, no particular gap can be seen in

- all the tasks except the designing/drawing (CAD) task performed by women.
11. For subjective symptoms of the fatigue by employment form, the most complaints are raised from those assigned to the VDT work on shift.
12. For subjective symptoms of the fatigue by daily VDT operation time, more complaints are raised as the operation time runs longer.
13. For subjective symptoms of the fatigue by age group, the higher rate of complaints is from the women of 19 to 30 years old, followed by the men of the same age group.
14. The fatigue caused by the VDT work varies at large, ranging from the eyes getting tired, shoulders becoming stiff, the whole body getting languid, which represent the psychical fatigue, to the mental symptoms represented by irritation and fretfulness. Because, the factors causing such a series of fatigue are found very compound. Moreover it is also pointed out longer the years of experience and the daily VDT operation time, worse and more intensified these symptoms.

30 - 36%, "Cannot concentrate my ideas" and "impatient" by 27% respectively. (See Chart No. 4 - 1).

Nevertheless, it is not applicable to all the workers indiscriminately. By sex, more men than women have complaints over subjective symptoms regarding all items. By employment status, the highest percentages of such complaints can be seen among the workers dispatched on contract ("lent-a-worker" category) regarding all items (Table No. 4 - 1). According to this table, about a half of the lent-a-worker category (43 - 49%) have complaints over "fretful" and "impatient".

Furthermore, by employment form, more complaints are coming from the workers on "shift work" than others on "day shift", and "regular night duty" than "shift work", over all items (Table No. 4 - 2).

To sum up, the particularly higher rates of complaints over subjective symptoms of mental failures are initiated, among the VDT workers, from the female workers, the "lent-a-worker" group and the regular night duty category.

Table No. 3-1

Rate of VDT Workers Felt Abnormal Eymptoms on, Eyes
Consulted with Doctors over Eye Diseases (%)

	Total no. of workers	Workers experienced eye disorders	Workers experienced eye diseases
VDT workers	12,121	50.2%	6.5%
Non-VDT workers	1,022	34.4	7.7
Sex			
Male	7,368	43.3	4.6
Female	4,489	62.8	9.7
Type of tasks			
Data entry	5,757	51.8	6.9
Dialogue	2,433	52.2	6.5
Data retrieval	1,647	43.8	5.6
Word processing	1,484	50.1	6.4
Monitoring	396	41.9	5.3
CAD	65	50.8	7.7
Employment status			
Regular	11,268	50.1	6.6
Non-regular	49	55.1	2.0
Part-timer	172	59.3	7.0
Temporary helper	64	62.5	1.6
Lent-a-worker	214	69.2	7.9
Worker at home	12	41.7	8.3
Age group			
Up to 19	266	48.1	1.9
20 - 24	2,879	60.4	7.1
25 - 29	2,788	57.5	6.7
30 - 34	2,359	49.9	7.2
35 - 39	1,699	40.2	5.9
40 - 44	882	38.2	6.2
45 - 49	467	39.6	7.1
50 - 54	353	31.7	5.4
55 & Above	159	23.9	1.9

Table No. 3-2

Rate of Complaints over Subjective Symptoms/
Employment Status/Employment Form

	Total of workers	Employment Status			
		Regular	Non-regular	Part-timer	Temporary helper
Grand total	12,121	11,268	49	172	64
Head feels heavy	31.3	31.3	30.6	36.0	39.1
Feel languid all over	42.0	42.1	46.9	33.7	48.4
Head feels fuzzy	33.7	33.9	30.6	29.7	34.4
Eyes feel tired	70.4	71.0	65.3	70.9	75.0
Want to lie down	38.8	39.1	36.7	33.7	45.3
Can't consolidate ideas	26.8	27.2	18.4	12.8	26.6
Fretful and irritated	36.7	37.1	38.8	28.5	39.1
Easily forgetful	30.2	30.4	24.5	29.7	25.0
Many mistakes committed	18.1	18.2	16.3	14.5	20.3
Impatient	27.3	27.4	20.4	19.2	23.4
Have a headache	22.2	22.3	24.5	25.0	39.1
Shoulders get stiff	56.3	56.7	55.1	67.4	67.2
Back pain	33.0	33.3	30.6	34.9	29.7
Mouth is dry	18.8	18.8	24.5	14.5	28.1
Get giddy	14.3	14.5	14.3	11.0	17.2
Have diarrhea often	11.4	11.5	10.2	9.3	14.1
Occasional constipation	12.5	12.5	22.4	18.6	14.1
Feel like vomiting	8.1	8.0	18.4	6.4	12.5

Table No. 3-2 (Cont'd.)

Rate of Complaints over Subjective Symptoms/
Employment Status/Employment Form

	Employment Status		Employment Forms		
	Lent-a-worker	Working at home	Day shift	Shift work	Regular night duty
Grand total	214	12	9,752	1,978	70
Head feels heavy	47.2	41.7	31.4	33.4	40.0
Feel languid all over	62.1	50.0	41.8	45.6	50.0
Head feels fuzzy	52.3	33.3	33.4	37.6	51.4
Eyes feel tired	86.0	75.0	71.2	71.6	70.0
Want to lie down	57.5	50.0	37.8	46.6	57.1
Can't consolidate ideas	43.5	25.0	26.8	29.1	35.7
Fretful and irritated	49.5	41.7	36.5	40.7	47.1
Easily forgetful	43.5	41.7	29.6	35.6	40.0
Many mistakes committed	26.2	16.7	18.4	17.6	30.0
Impatient	46.3	41.7	26.6	32.0	38.6
Have a headache	28.0	16.7	22.5	22.5	32.9
Shoulders get stiff	69.2	41.7	57.5	55.4	60.0
Back pain	44.4	25.0	32.5	38.3	38.6
Mouth is dry	29.0	16.7	17.1	28.0	35.7
Get giddy	20.6	8.3	14.5	14.5	20.0
Have diarrhea often	14.5	8.3	10.5	16.1	25.7
Occasional constipation	14.0	16.7	12.5	14.0	10.0
Feel like vomiting	11.7	0.0	7.9	9.1	14.3

Table No. 3-2 (Cont'd.) Rate of Complaints over Subjective Symptoms/
Employment Status/Employment Form

	Employment Status				
	Total of workers	Regular	Non- regular	Part- timer	Temporary helper
Occasional cough and phlegm	16.4	16.6	22.4	8.1	10.9
Palpitation and short-winded	10.5	10.6	10.2	7.0	14.1
Feel as if chest compressed suddenly	9.8	9.8	10.2	8.1	15.6
Sexual desire reduced	9.5	9.6	10.2	6.4	10.9
Frequent insomnia	12.7	12.9	16.3	7.6	14.1
Develop hives and rashes	7.2	7.2	6.1	4.7	9.4
Ears ring	11.7	11.9	12.2	10.5	9.4
A hard of hearing	12.3	12.5	10.2	9.3	14.1
Difficult to urinate	2.1	2.2	2.0	0.6	3.1
Average Complaints	6.2	6.3	6.3	5.6	7.0

Table No. 3-2 (Cont'd.) Comparison of Complaints About Eyes Symptoms Between
VDT Workers & Non-VDT Workers

	Employment Status				
	Lent-a- worker	Working at home	Day shift	Shift work	Regular night duty
Occasional cough and phlegm	25.7	25.0	15.2	23.5	27.1
Palpitation and short-winded	18.2	25.0	10.1	13.5	14.3
Feel as if chest compressed suddenly	16.8	8.3	9.3	12.2	18.6
Sexual desire reduced	13.1	16.7	8.4	14.9	22.9
Frequent insomnia	14.5	8.3	11.0	21.1	30.0
Develop hives and rashes	9.8	0.0	7.0	8.4	10.0
Ears ring	14.0	0.0	11.0	16.3	10.0
A hard of hearing	15.9	8.3	11.1	19.5	7.1
Difficult to urinate	0.5	0.0	1.8	7.5	5.7
Average Complaints	8.8	6.4	6.1	7.2	8.4

Chart No. 3-1

Comparison of Complaints About Eyes Symptoms Between VDT Workers' & Non-VDT Workers' Groups

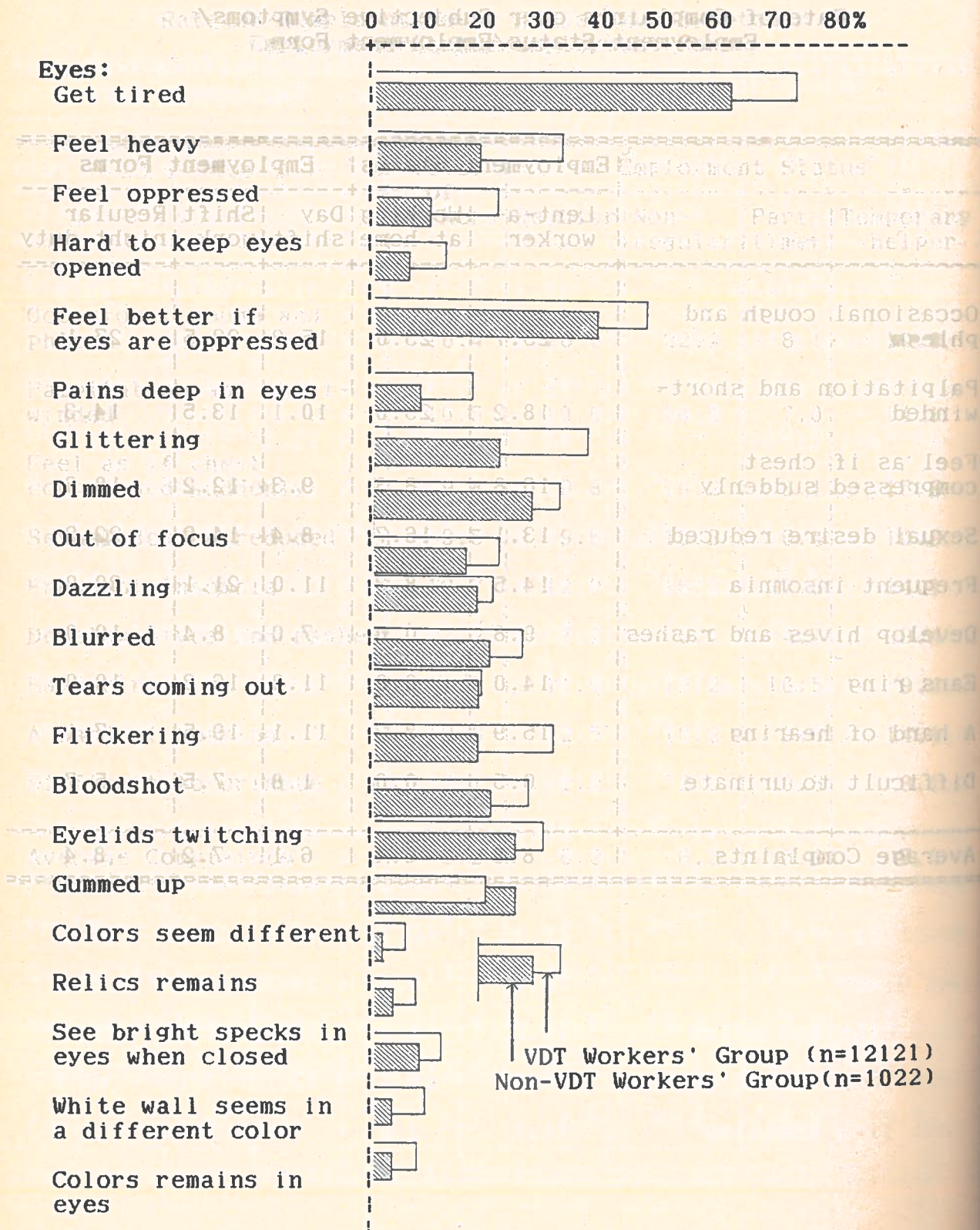


Chart No. 3-2

Chart No. 3-2

Complaints About Eye Symptoms By Age Group

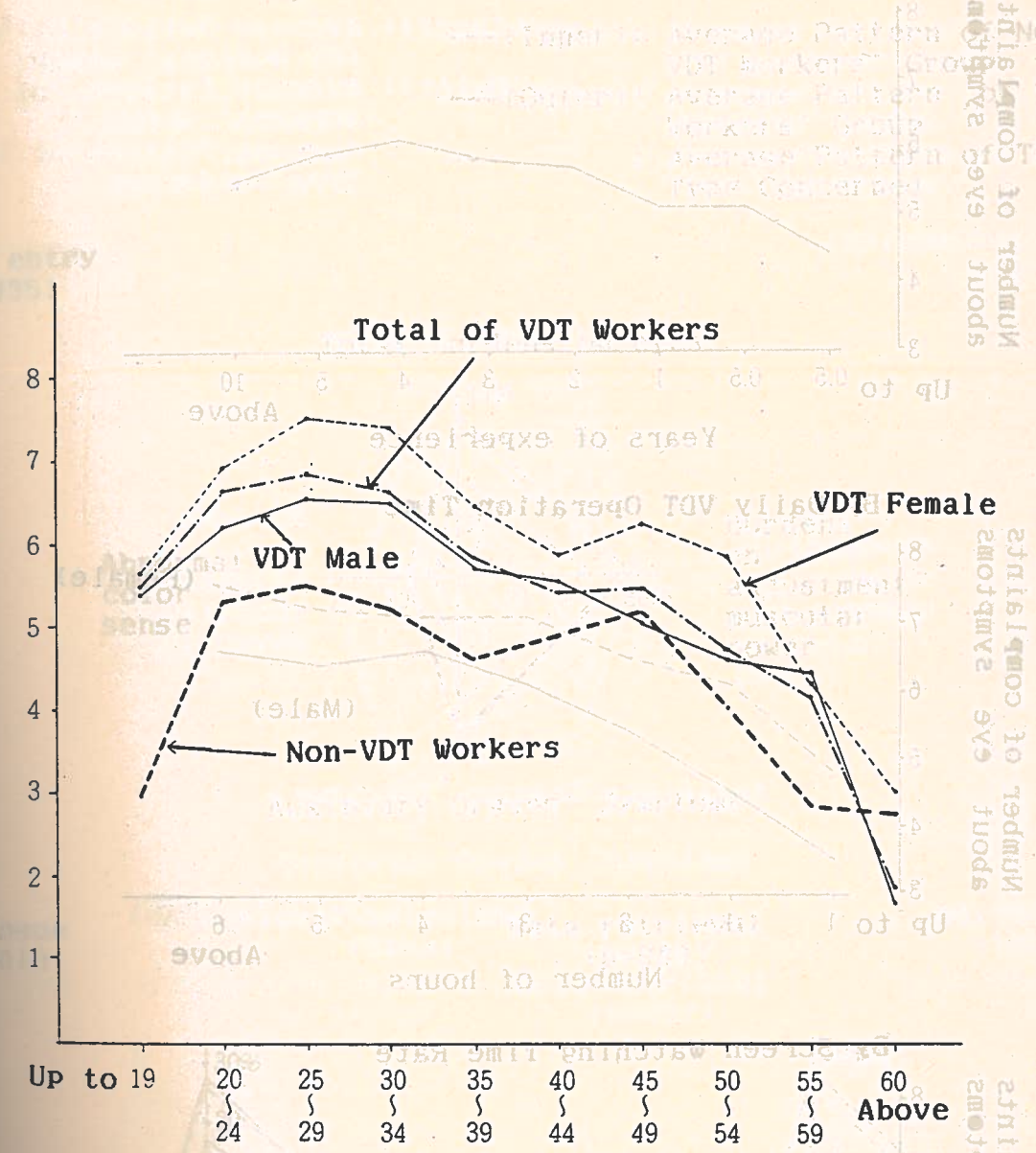


Chart No. 3-3

Comparison of Complaints About Eye Symptoms By Experience Period/Daily Operation Time/Screen Watching Time Rate of VDT

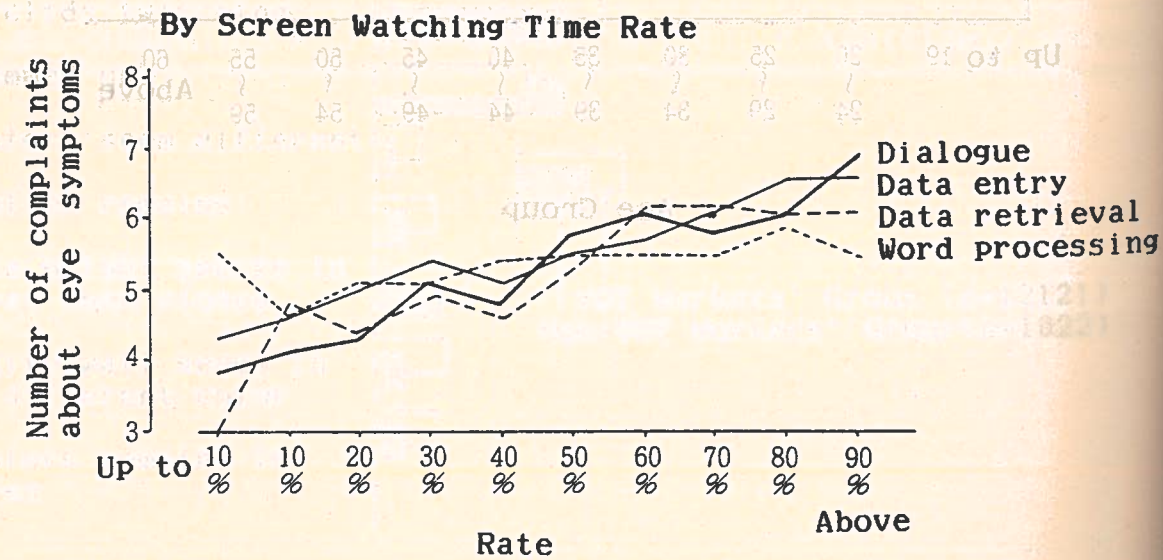
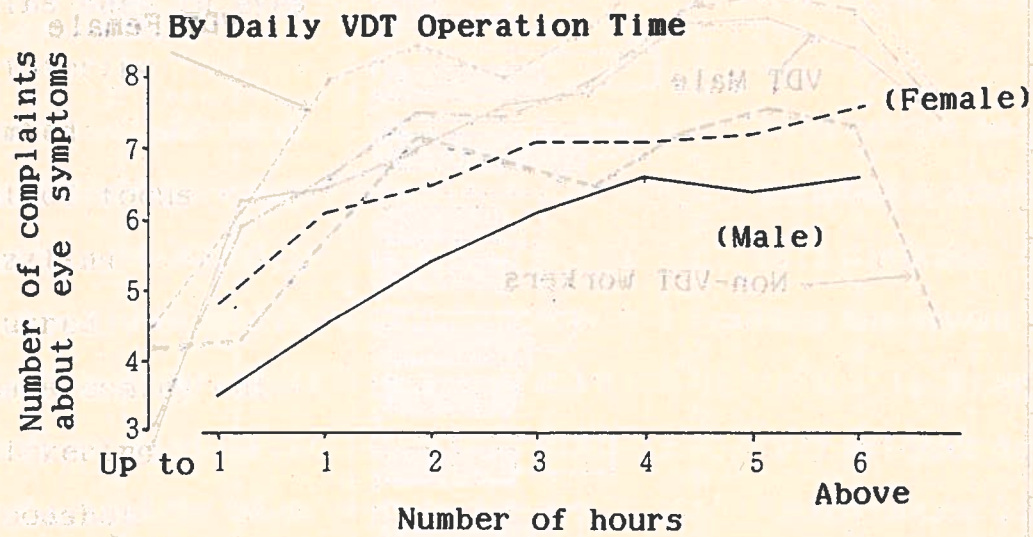
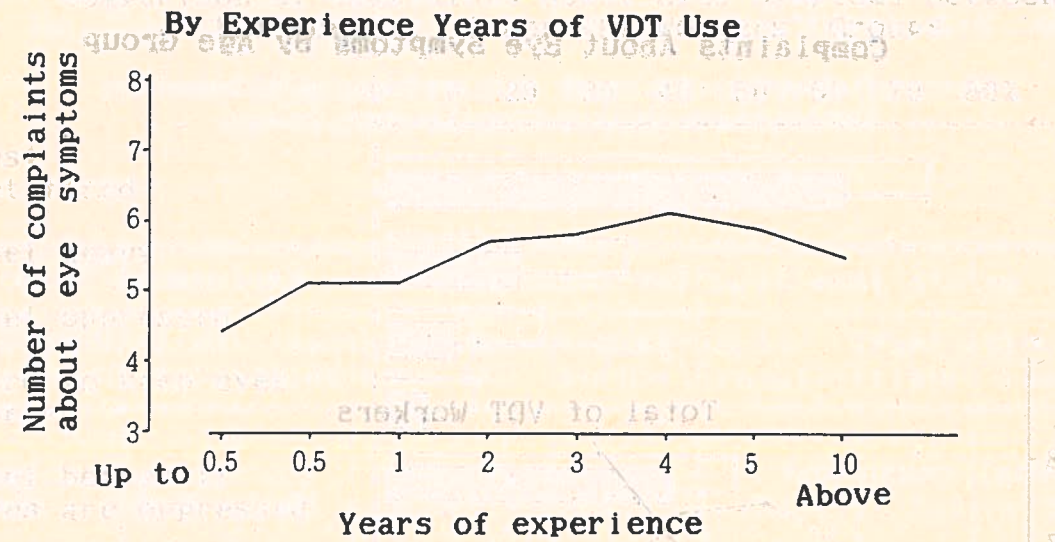


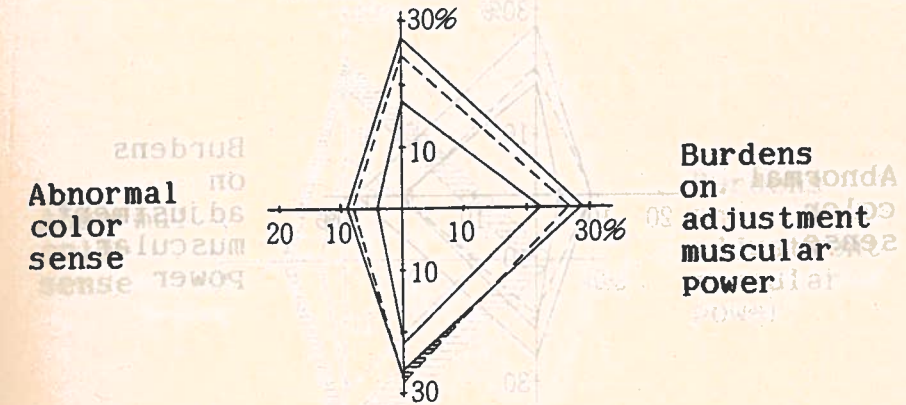
Chart No. 3-4

Pattern of Complaints About Eye Symptoms Caused By Four Factors/Type of Tasks For Men

(Inner): Average Pattern of Non-VDT Workers' Group
 (Outer): Average Pattern of VDT Workers' Group
 --- : Average Pattern of Task Type Concerned

Data entry (n=3035)

Total burdens on eyes



Auxiliary Organs' Symptoms

Dialogue (n=2013)

Data retrieval (n=980)

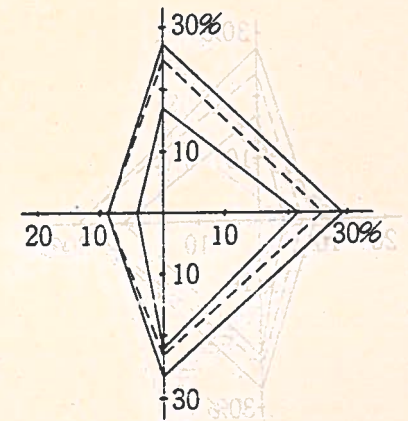
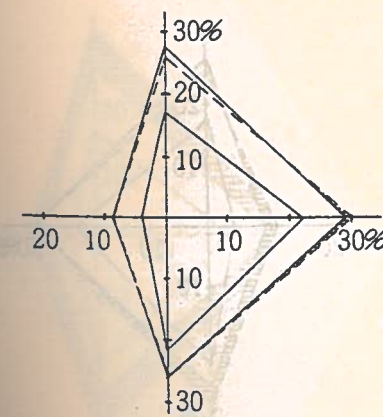


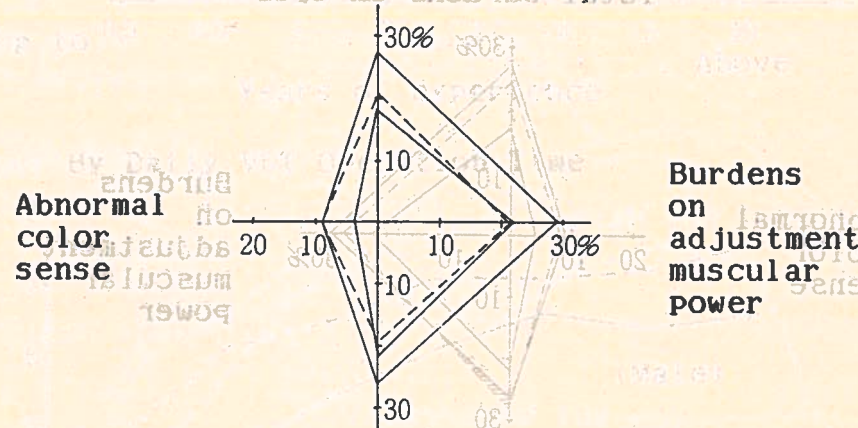
Chart No. 3-4 (Cont'd.)

Pattern of Complaints About Eye Symptoms Caused By Four Factors/Type of Tasks For Men

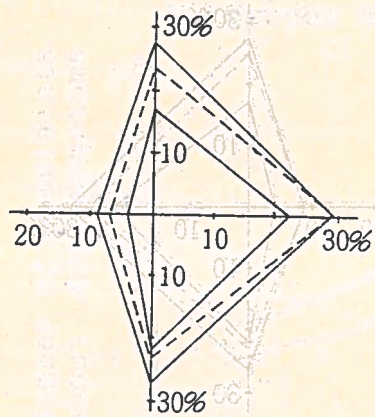
(Inner): Average Pattern of Non-VDT Workers' Group
 (Outer): Average Pattern of VDT Workers' Group
 : Average Pattern of Task Type Concerned

Word processing (n=743)

Total burdens on eyes



Monitoring (n=356)



Designing/Drwaing(CAD) (n=48)

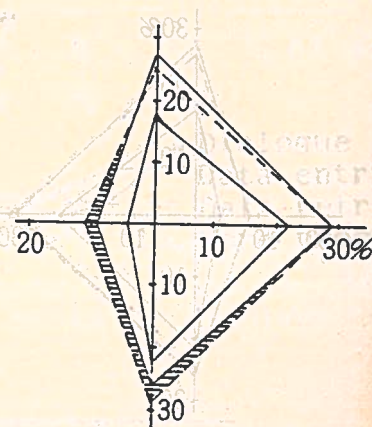


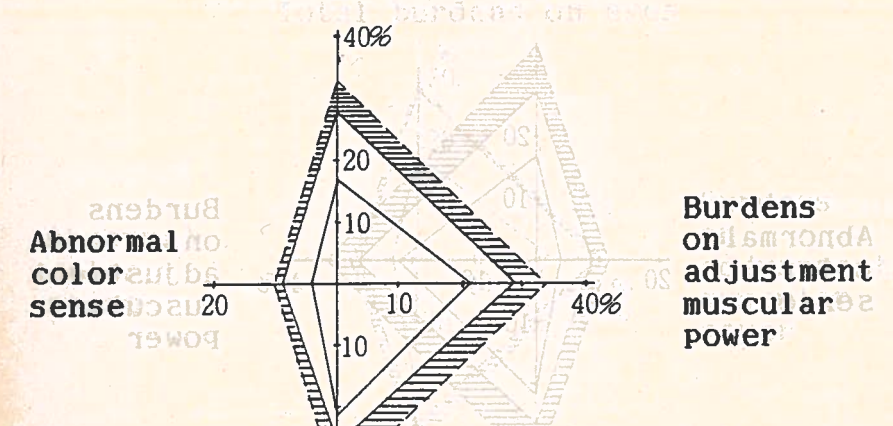
Chart No. 3-5

Pattern of Complaints About Eye Symptoms Caused By Four Factors/Type of Tasks For Women

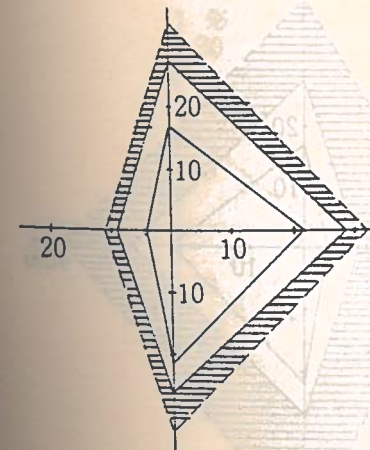
(Inner): Average Pattern of Non-VDT Workers' Group
 (Outer): Average Pattern of VDT Workers' Group
 : Average Pattern of Task Type Concerned

Data entry (n=2610)

Total burdens on eyes



Dialogue (n=368)



Data retrieval (n=607)

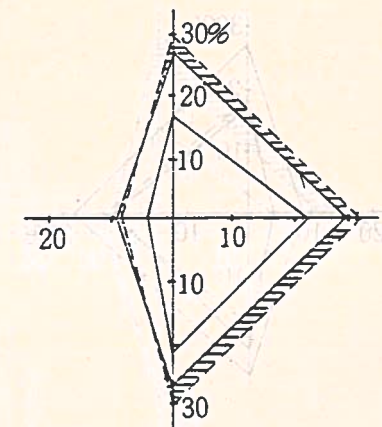


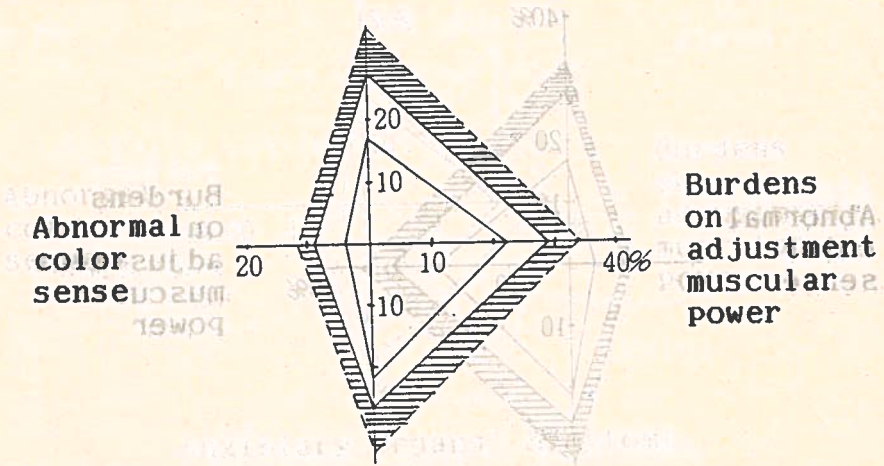
Chart No. 3-5 (Cont'd.)

Pattern of Complaints About Eye Symptoms Caused By Four Factors/Type of Tasks For Women

(Inner): Average Pattern of Non-VDT Workers' Group
 (Outer): Average Pattern of VDT Workers' Group
 --- : Average Pattern of Task Type Concerned

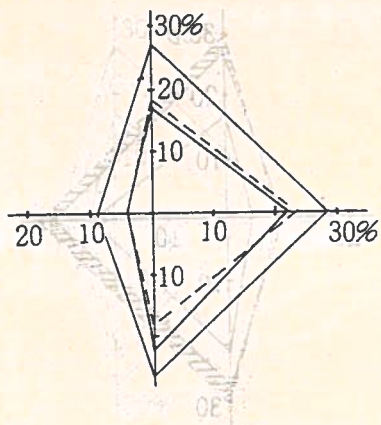
Word processing (n=2610)

Total burdens on eyes

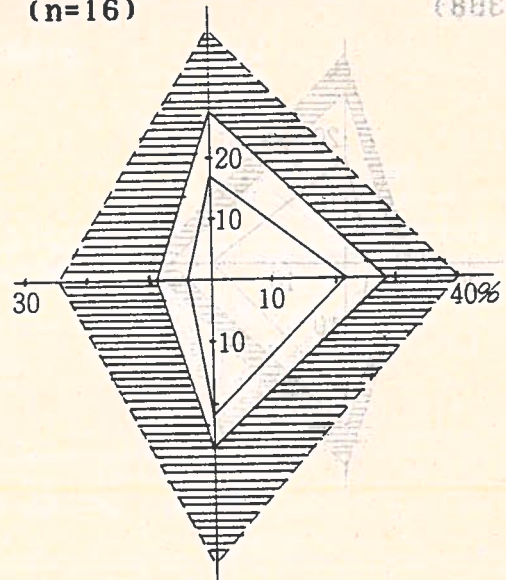


Auxiliary Organs' Symptoms

Monitoring (n=29)



Designing/Drwaing(CAD) (n=16)

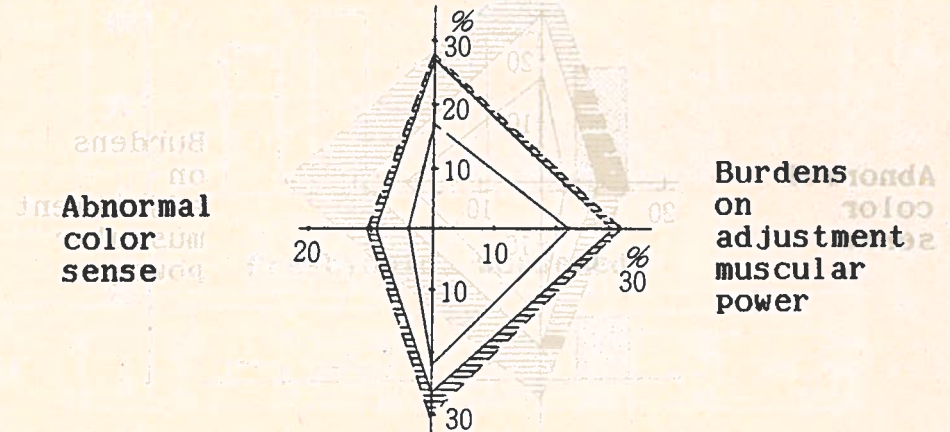


Pattern of Complaints About Eye Symptoms Caused By Four Factors/Employment Status

(Inner): Average Pattern of Non-VDT Workers' Group
 (Outer): Average Pattern of VDT Workers' Group
 --- : Average Pattern of Task Type Concerned

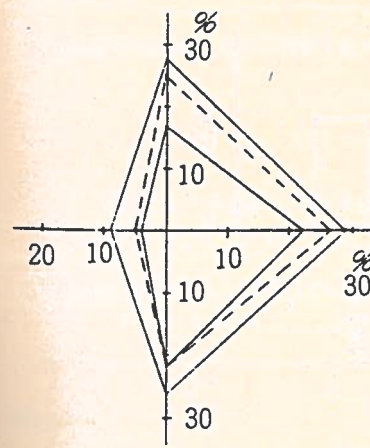
Non-regular employment (n=49)

Total burdens on eyes



Auxiliary Organs' Symptoms

Part-timer (n=172)



Temporary helper (n=64)

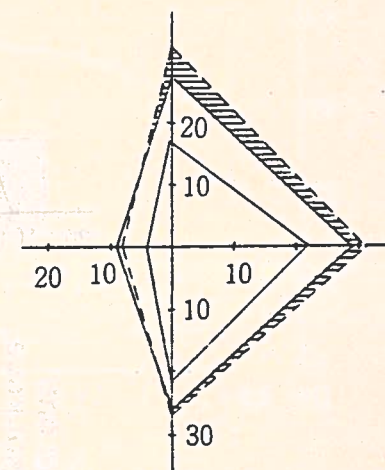


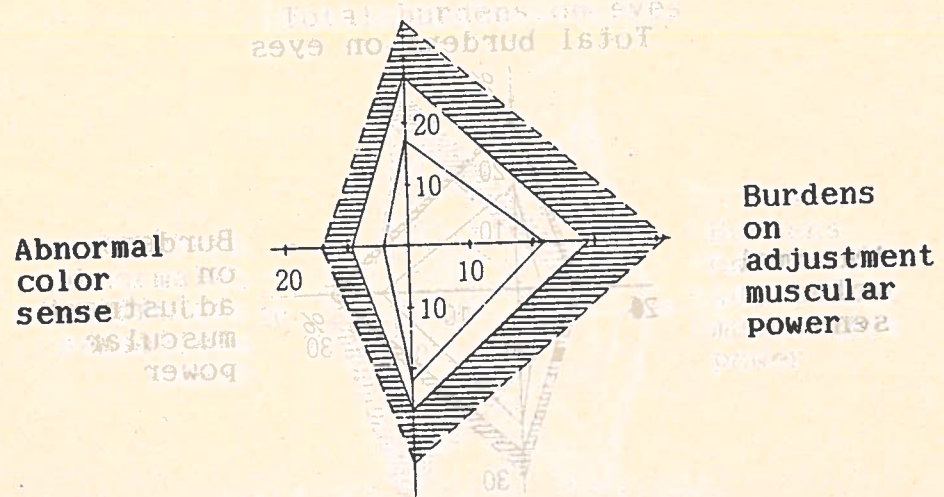
Chart No. 3-6 (Cont'd.)

Pattern of Complaints About Eye Symptoms Caused By Four Factors/Employment Status

— (Inner): Average Pattern of Non-VDT Workers' Group
 — (Outer): Average Pattern of VDT Workers' Group
 - - - (Dotted): Average Pattern of Task Type Concerned
 --- (Dashed): Average Pattern of Task Type Concerned

Lent-a-worker (n=214)

Total burdens on eyes



Auxiliary Organs' Symptoms

Working at home (n=12)

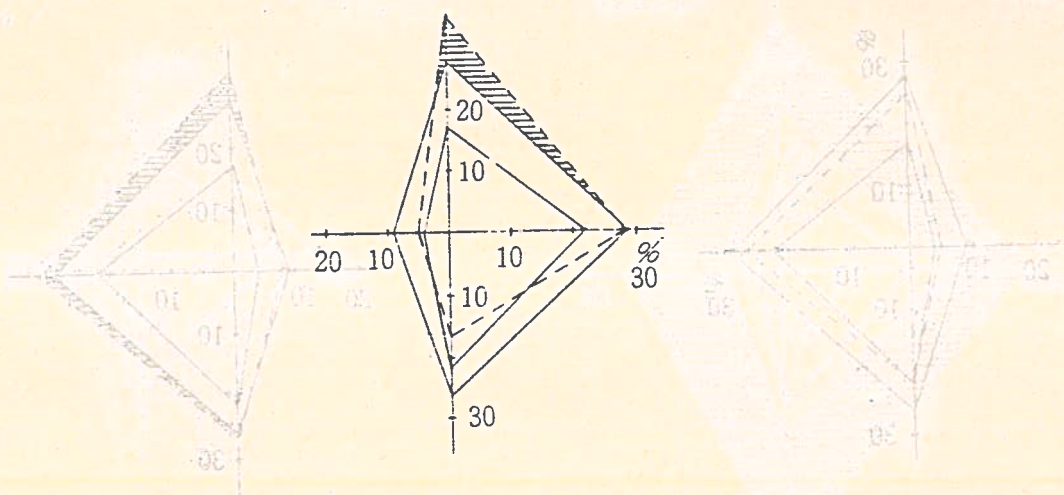


Chart No. 3-7

Eyesight Changed During One Year/ Male and Female/ VDT & Non-VDT Workers' Groups

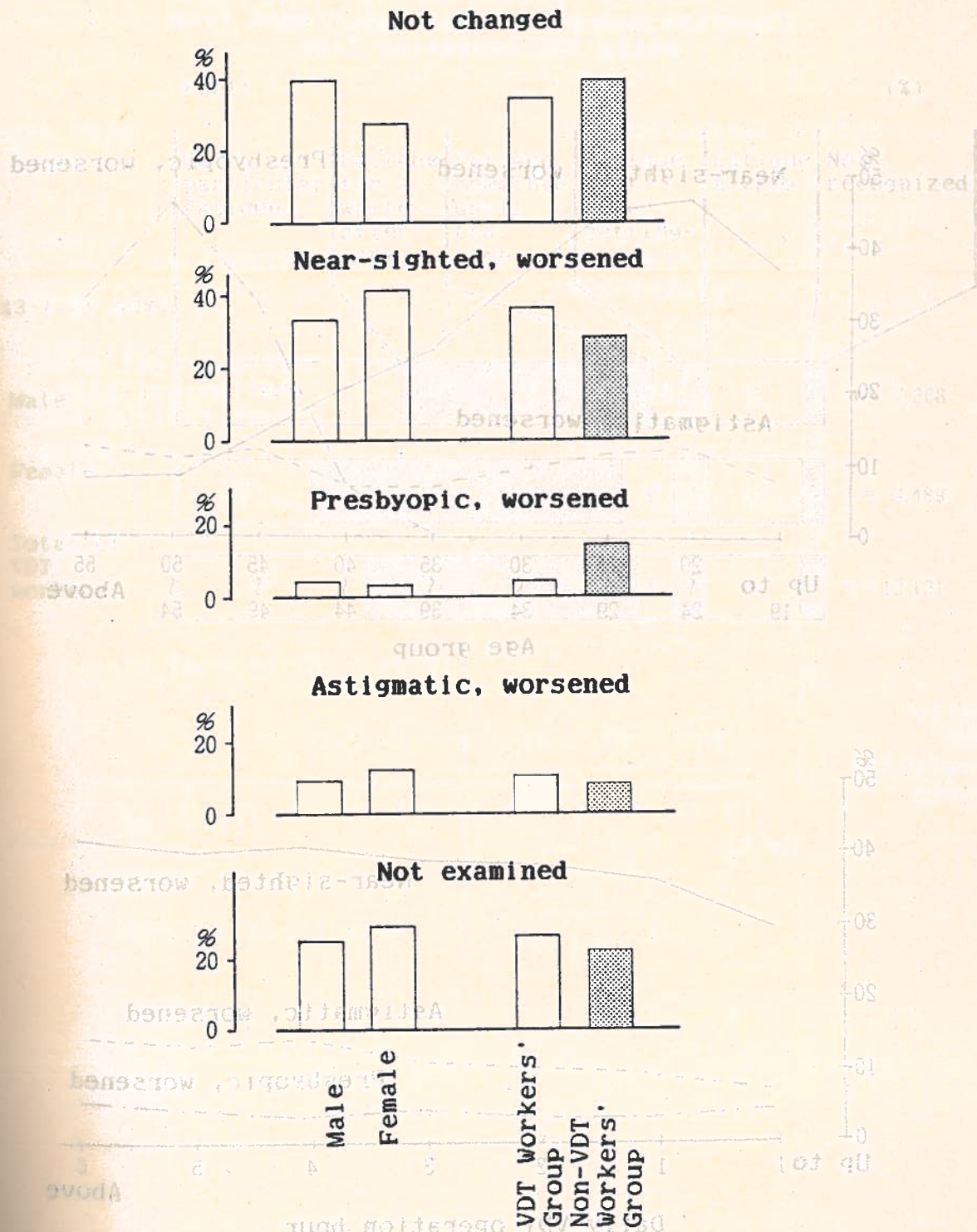


Chart No. 3-8

Eyesight Changed During One Year/Daily VDT Operation Time/Age Group

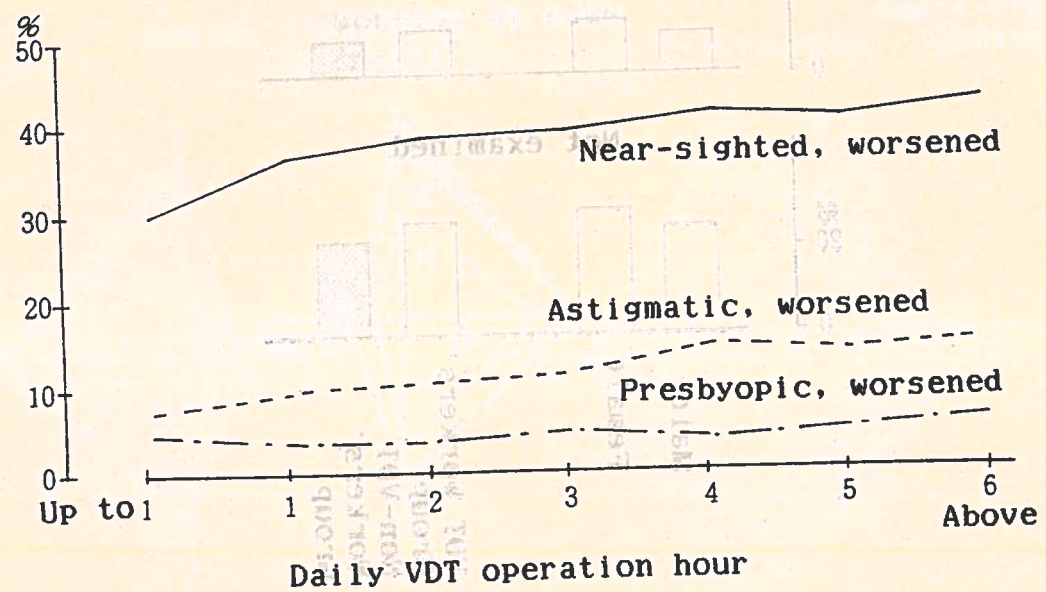
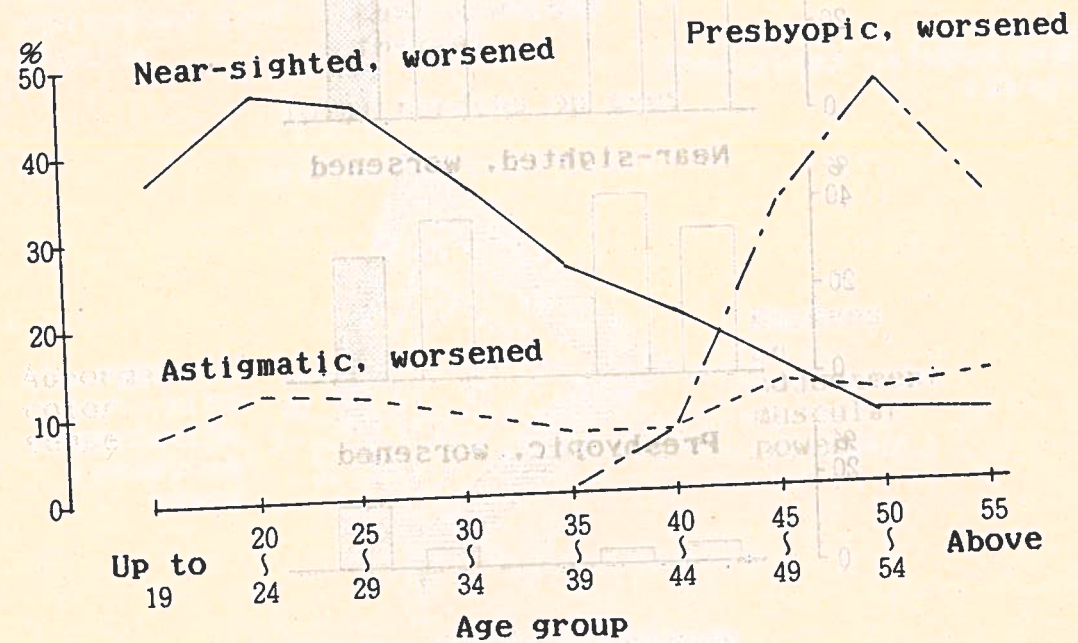


Chart No. 3-9

Degrees of Fatigue Caused by VDT Work

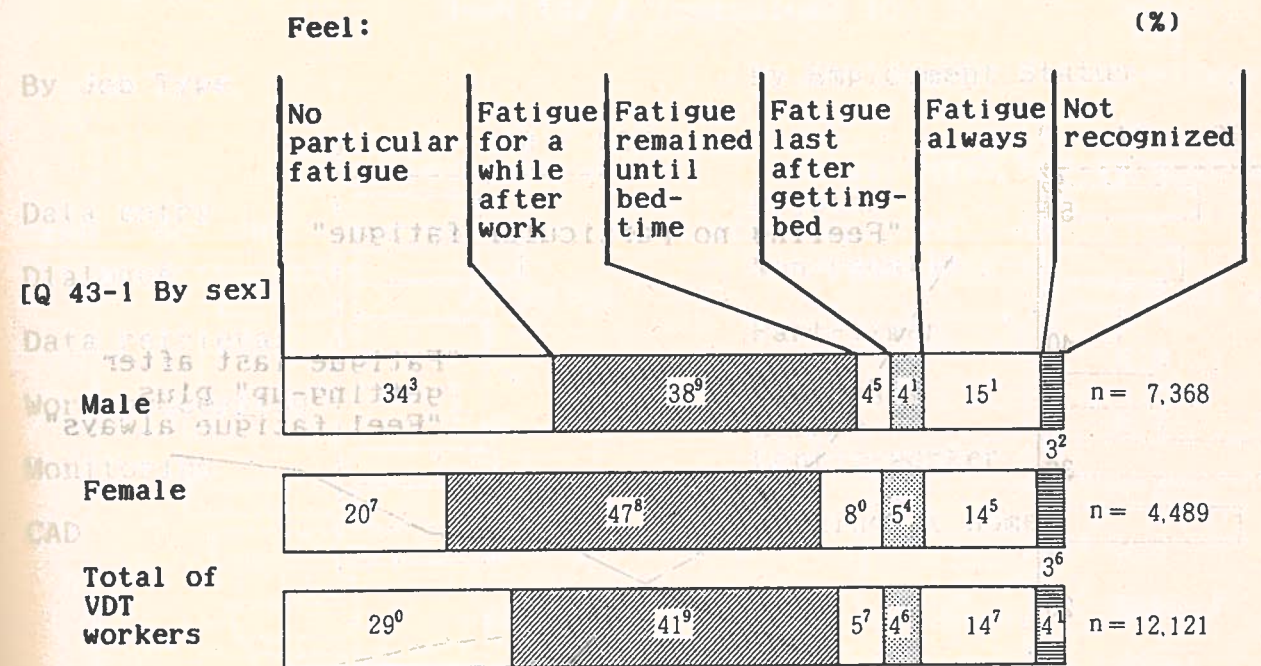


Chart No. 3-10
Changing Degrees of Fatigue Viewed from Daily VDT Operation Time

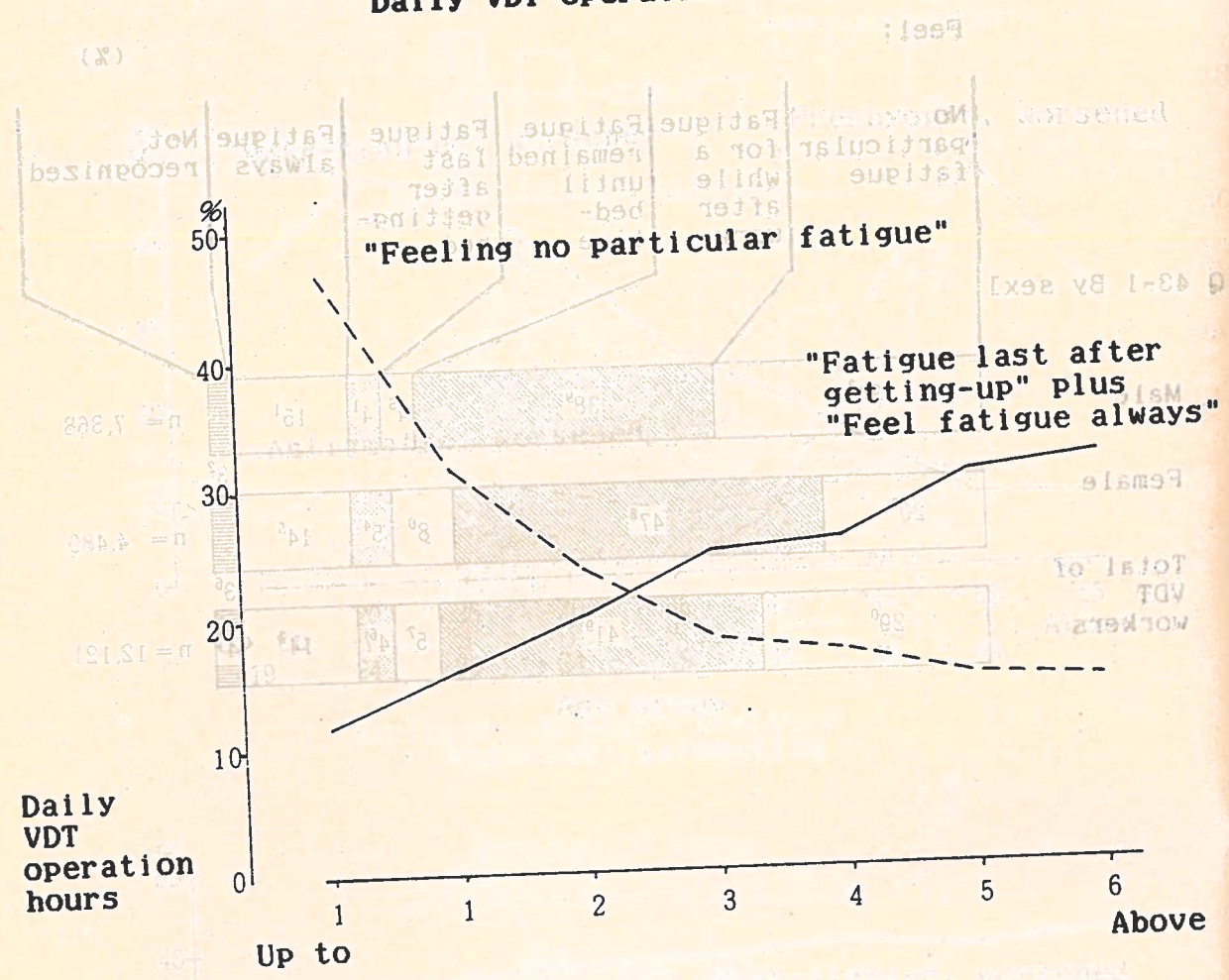
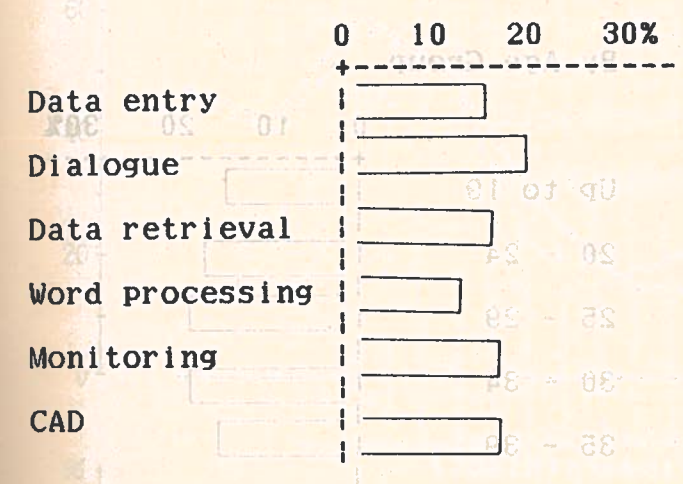


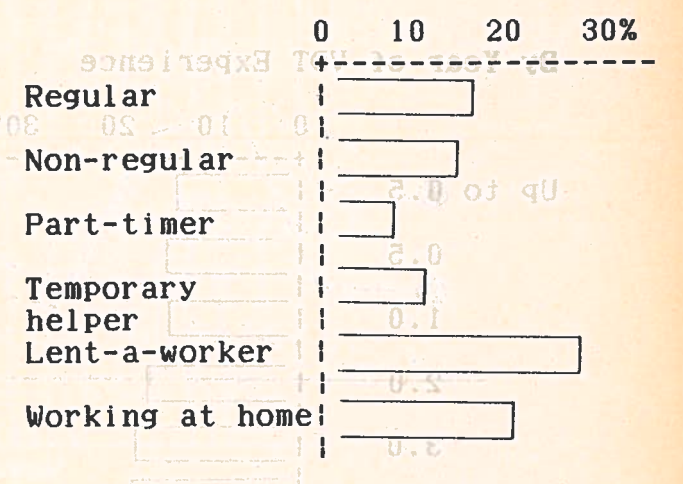
Chart No. 3-11

Chronic Fatigue Covering "Fatigue Lasting After Getting-Up" Plus "Feel Fatigue Always" By Category of Employment & VDT Work

By Job Type



By Employment Status



By Form of Employment

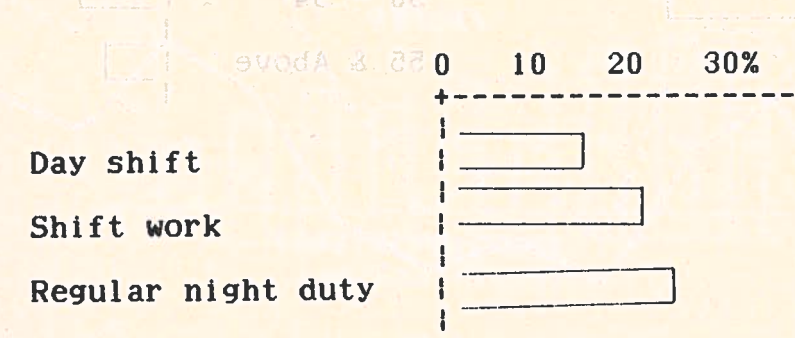


Chart No. 3-1-1 (Cont'd.)
 Chronic Fatigue Covering "Fatigue Lasting After Getting-Up"
 Plus "Feel Fatigue Always" By Category
 of Employment & VDT Work

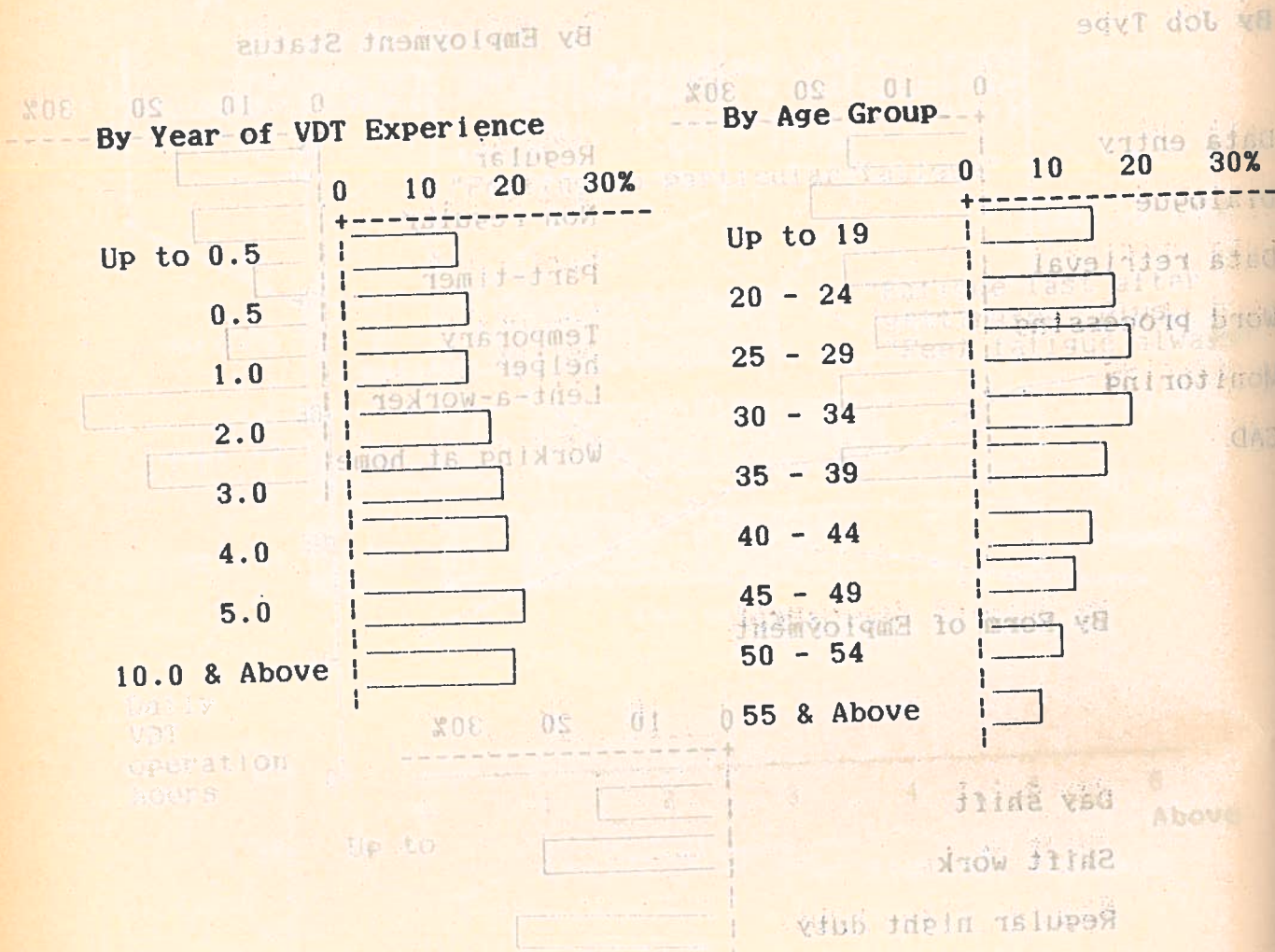
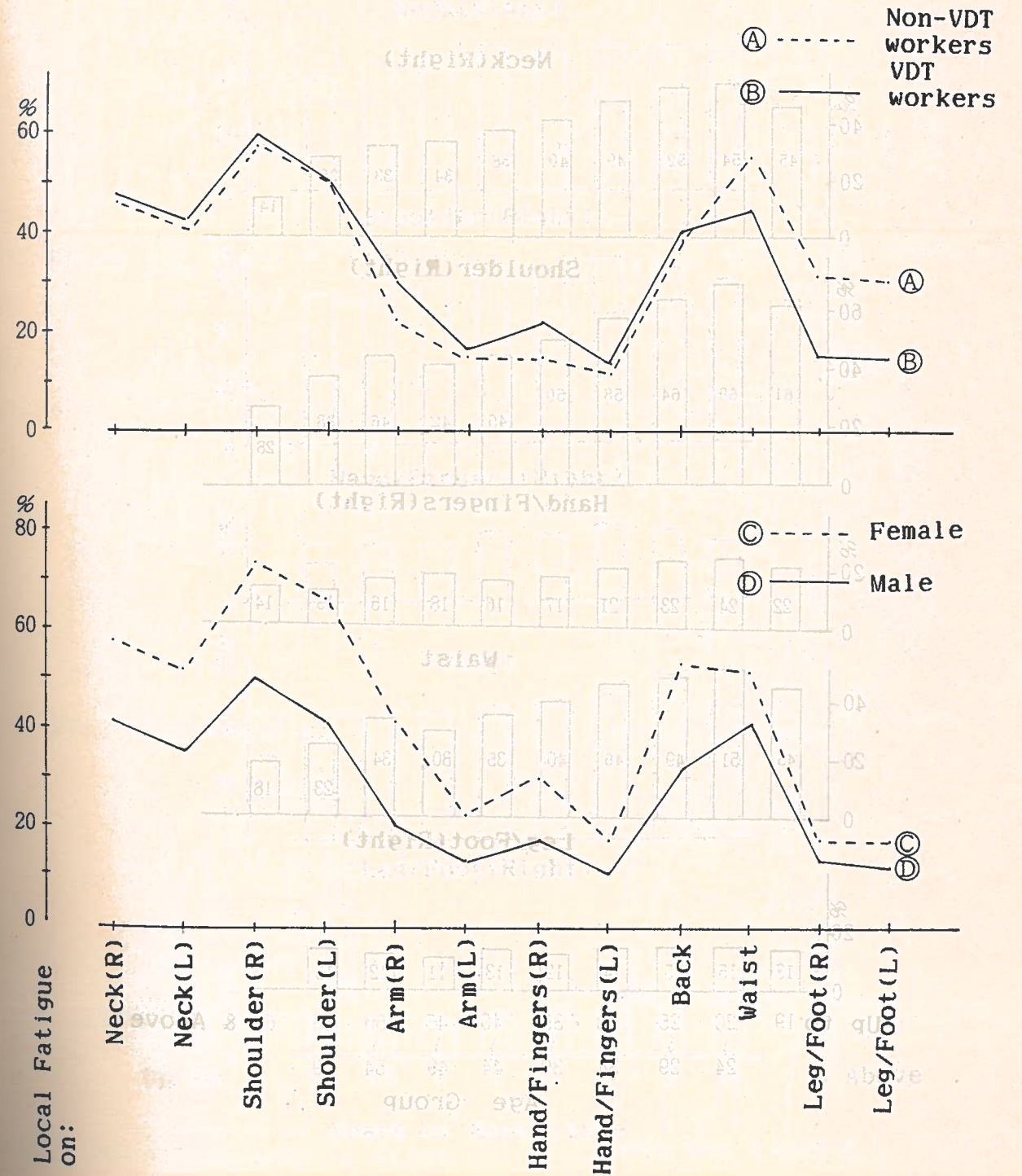


Chart No. 3-1-2

Percentage of Complaints about Fatigue/Men & Women
 Groups of VDT & Non-VDT Workers



Note: (R):right, (L):left

Chart No. 3-13

Complaints about Local Fatigue Caused by VDT Work/Age Group

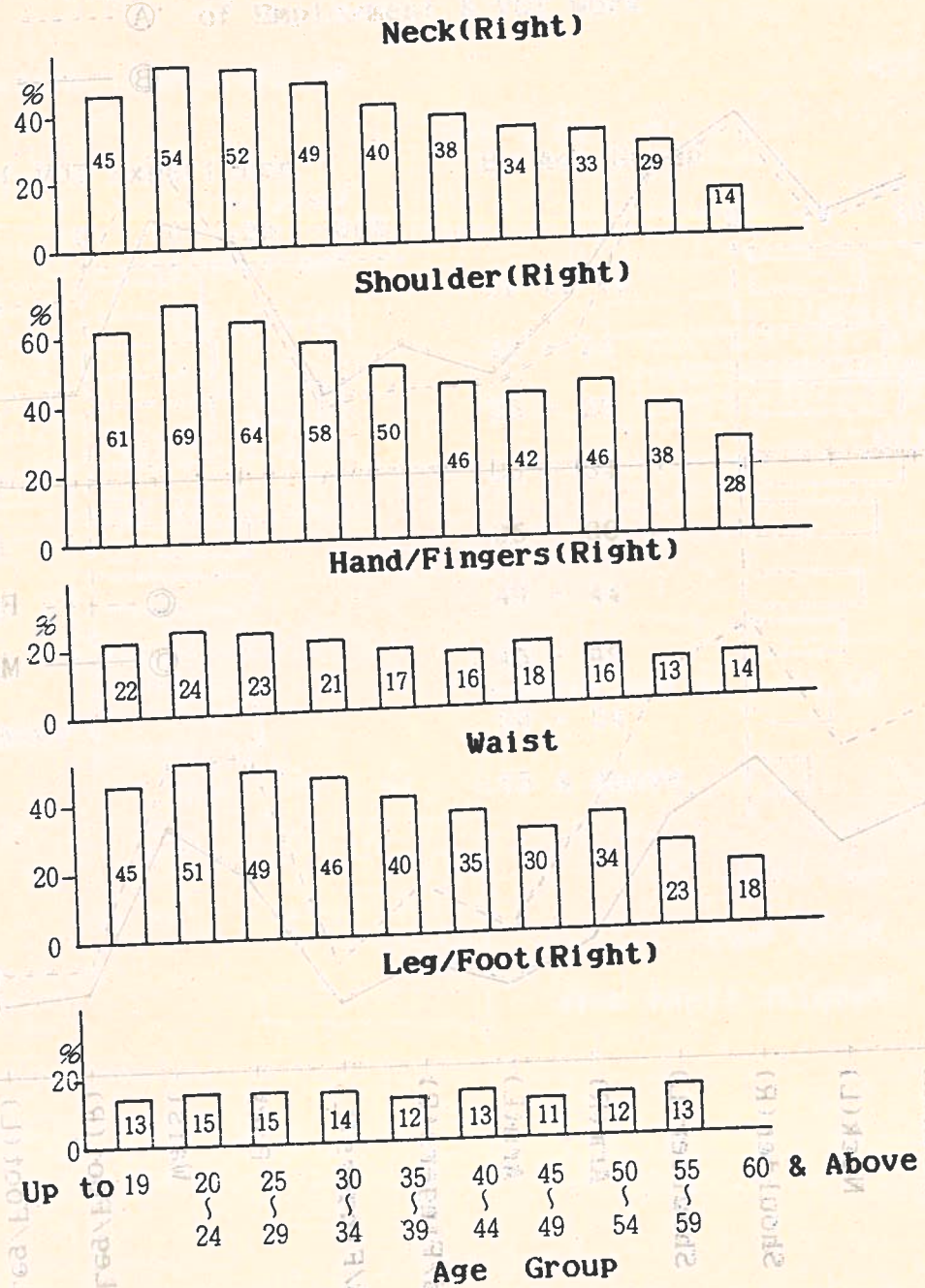


Chart No. 3-14

Complaints about Local Fatigue Caused by VDT Work/Years of Experience in VDT Operation

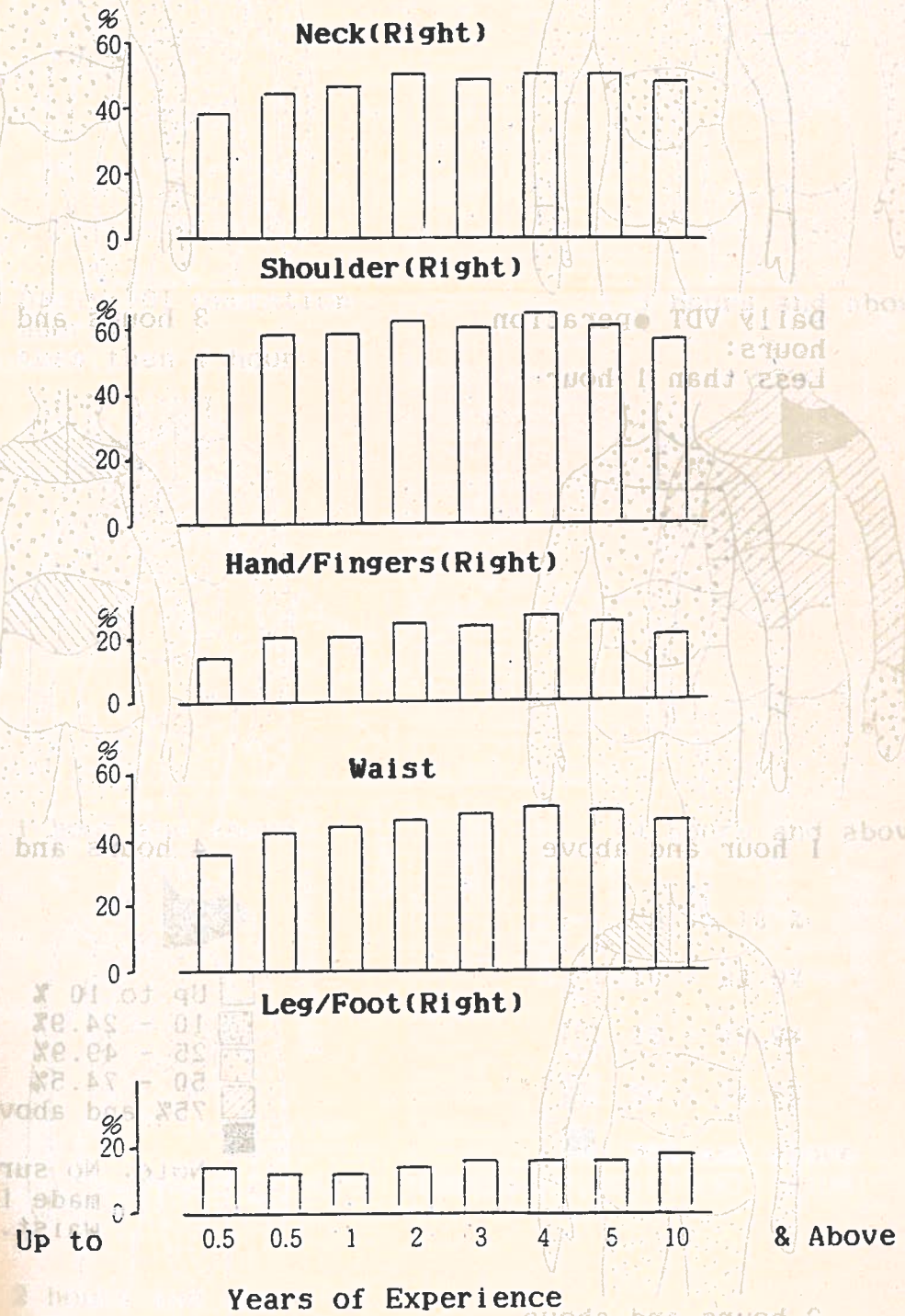


Chart No. 3-15

Rates of Complaints about Local Fatigue Caused By Daily VDT Operation Time (For Men)

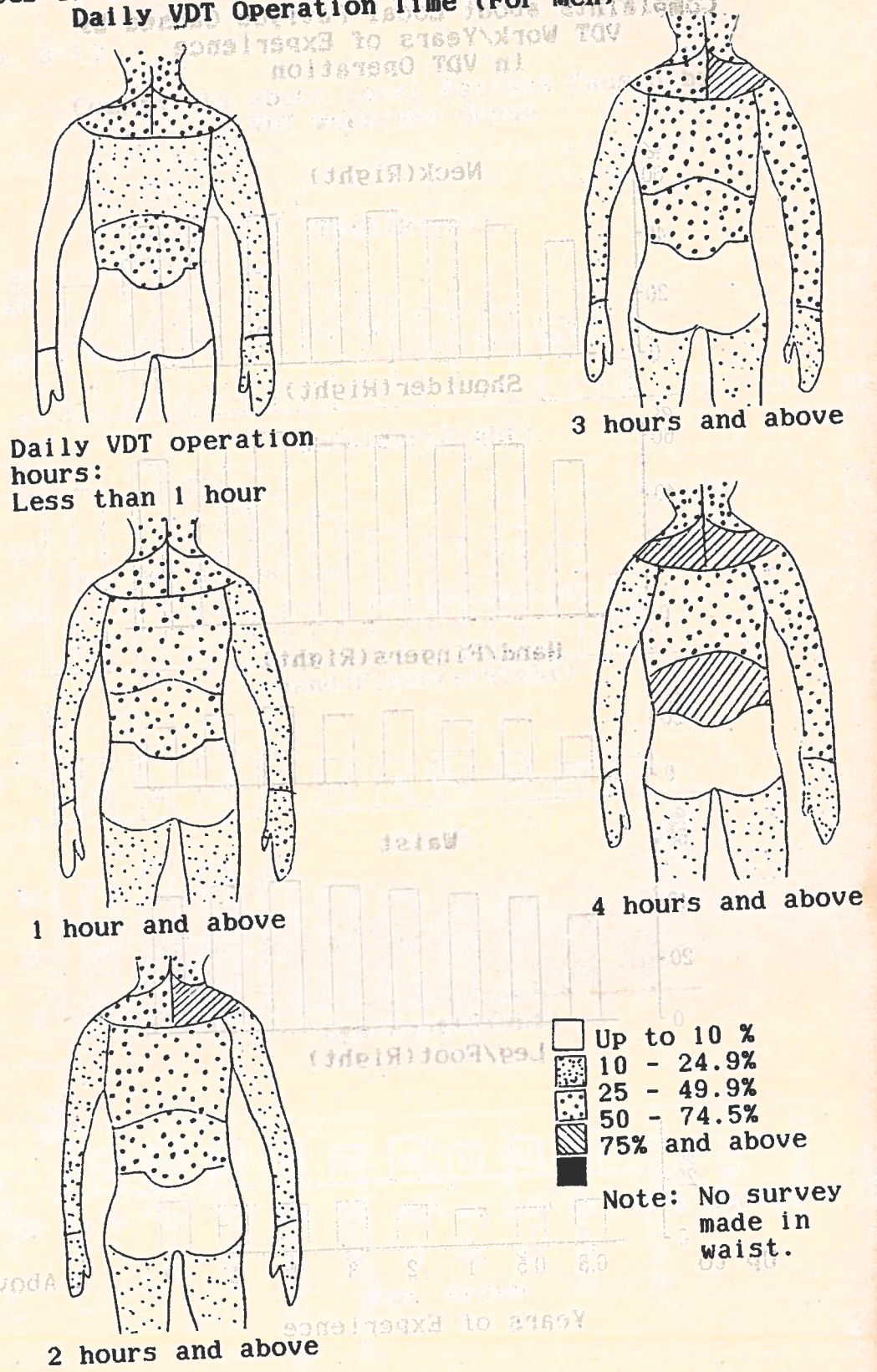


Chart No. 3-16

Rates of Complaints about Local Fatigue Caused By Daily VDT Operation Time (For Women)

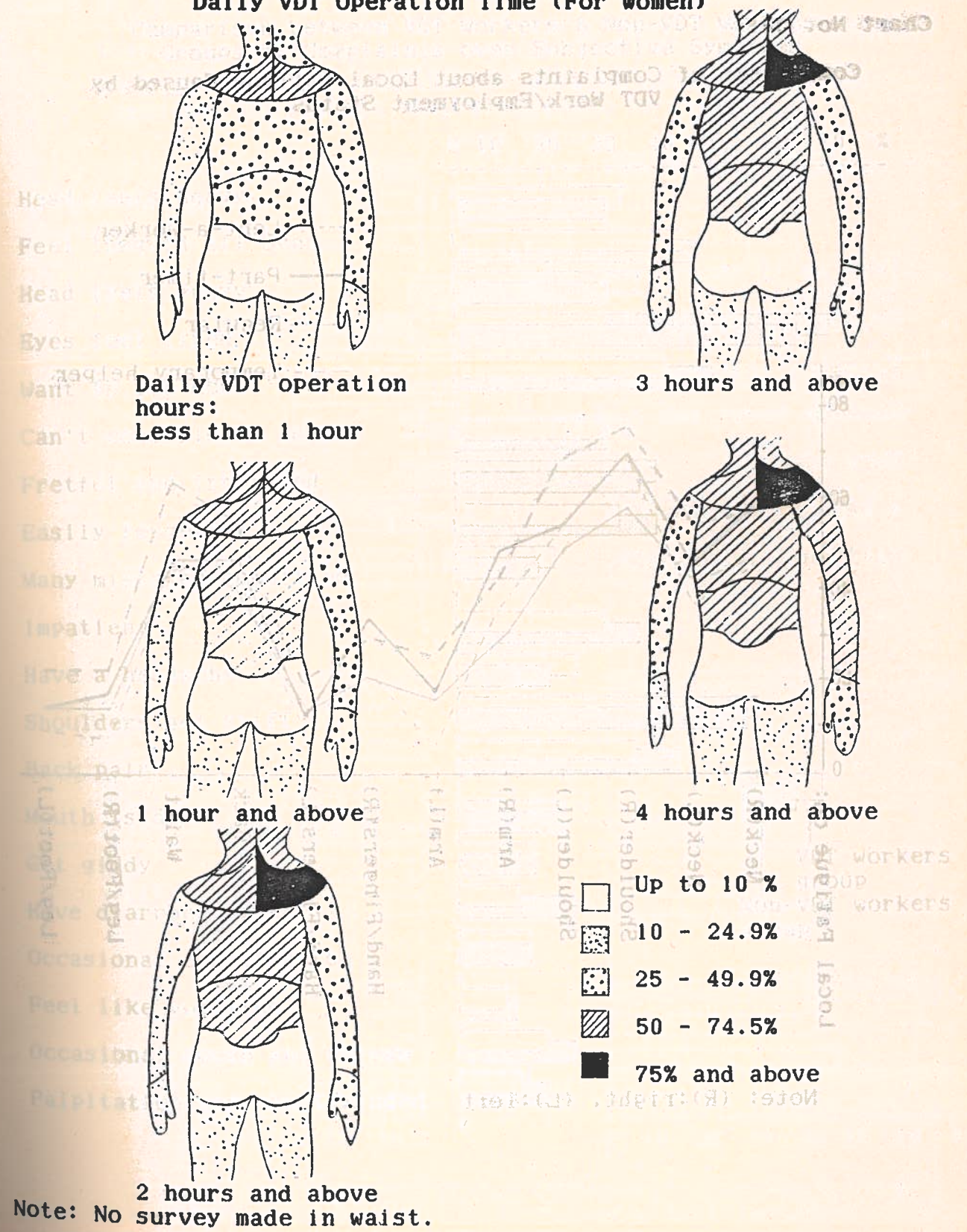
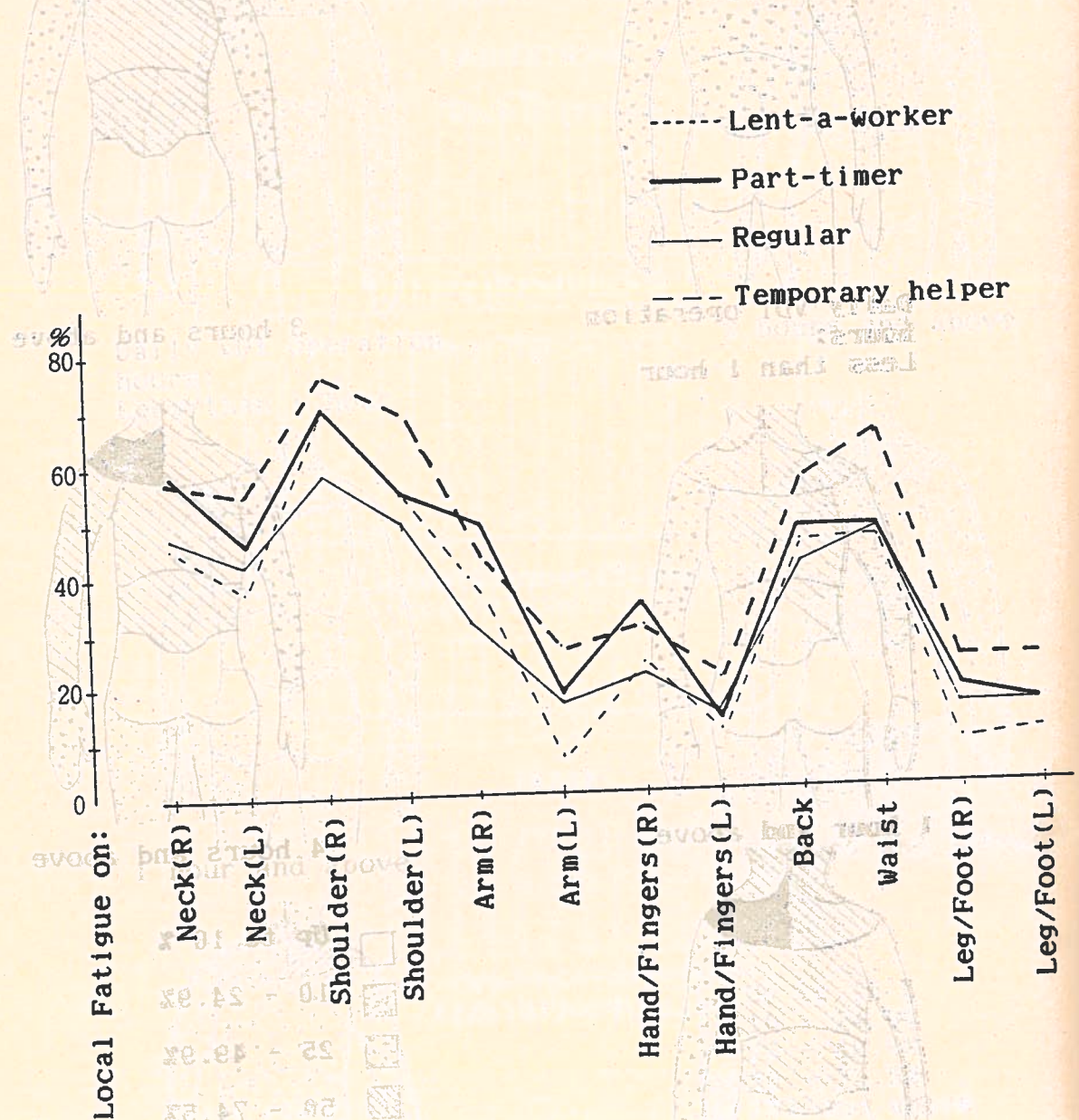


Chart No. 3-17

Comparison of Complaints about Local Fatigue Caused by VDT Work/Employment Status



Note: (R):right, (L):left

Chart No. 3-18

Comparison between VDT Workers & Non-VDT Workers Groups of Complaints over Subjective Symptoms

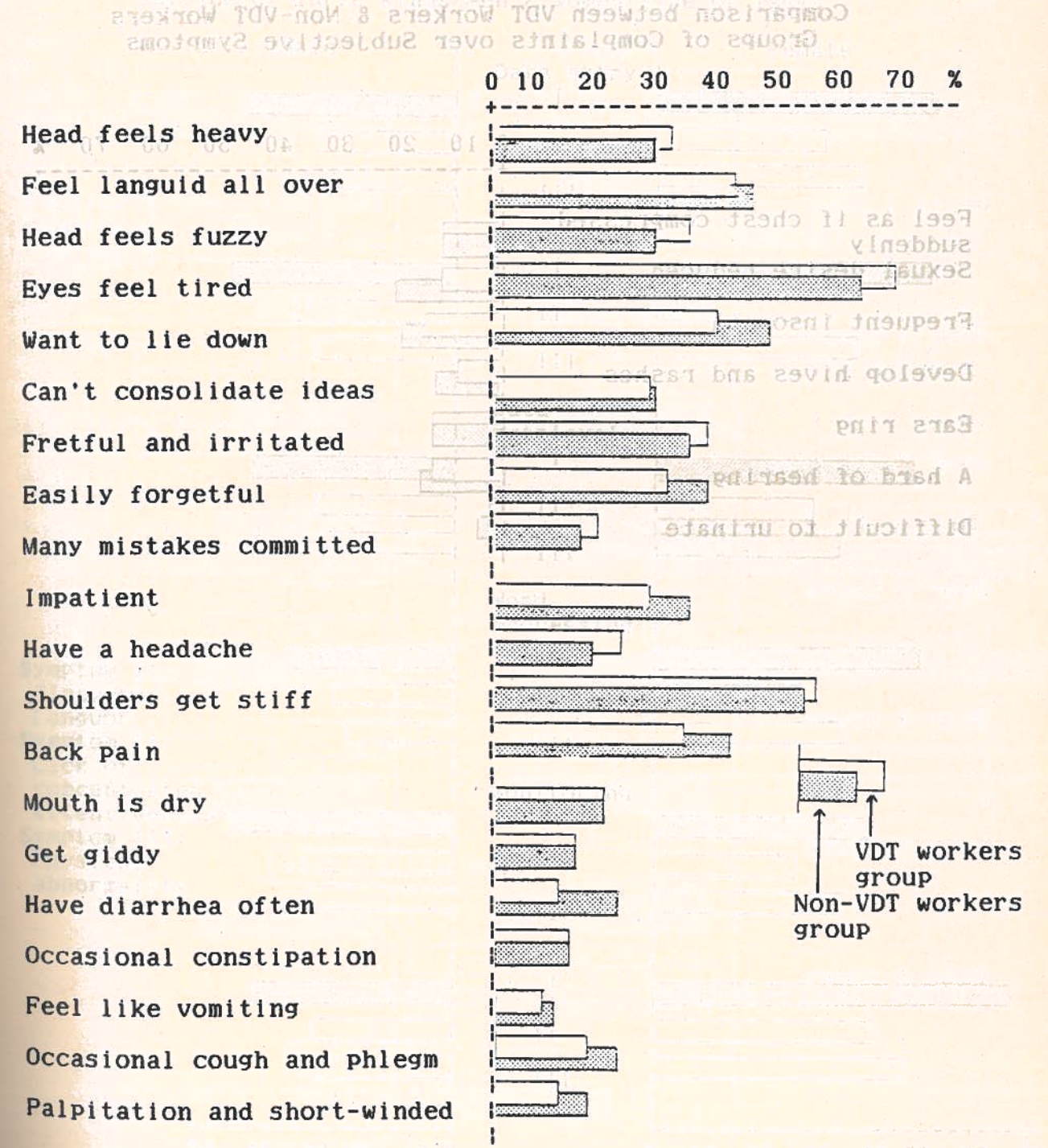


Chart No. 3-18 (Cont'd.)

Comparison between VDT Workers & Non-VDT Workers
Groups of Complaints over Subjective Symptoms

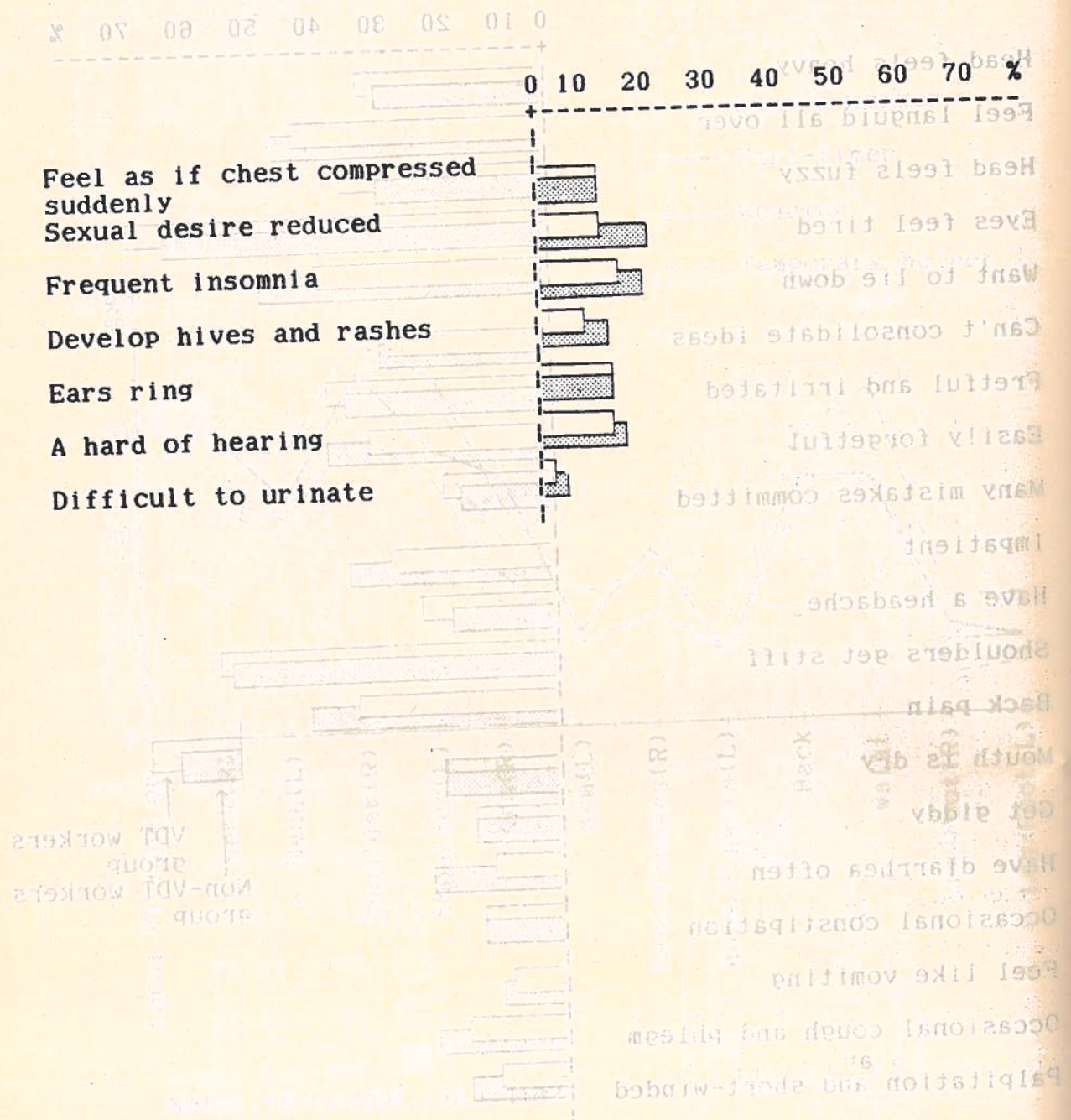
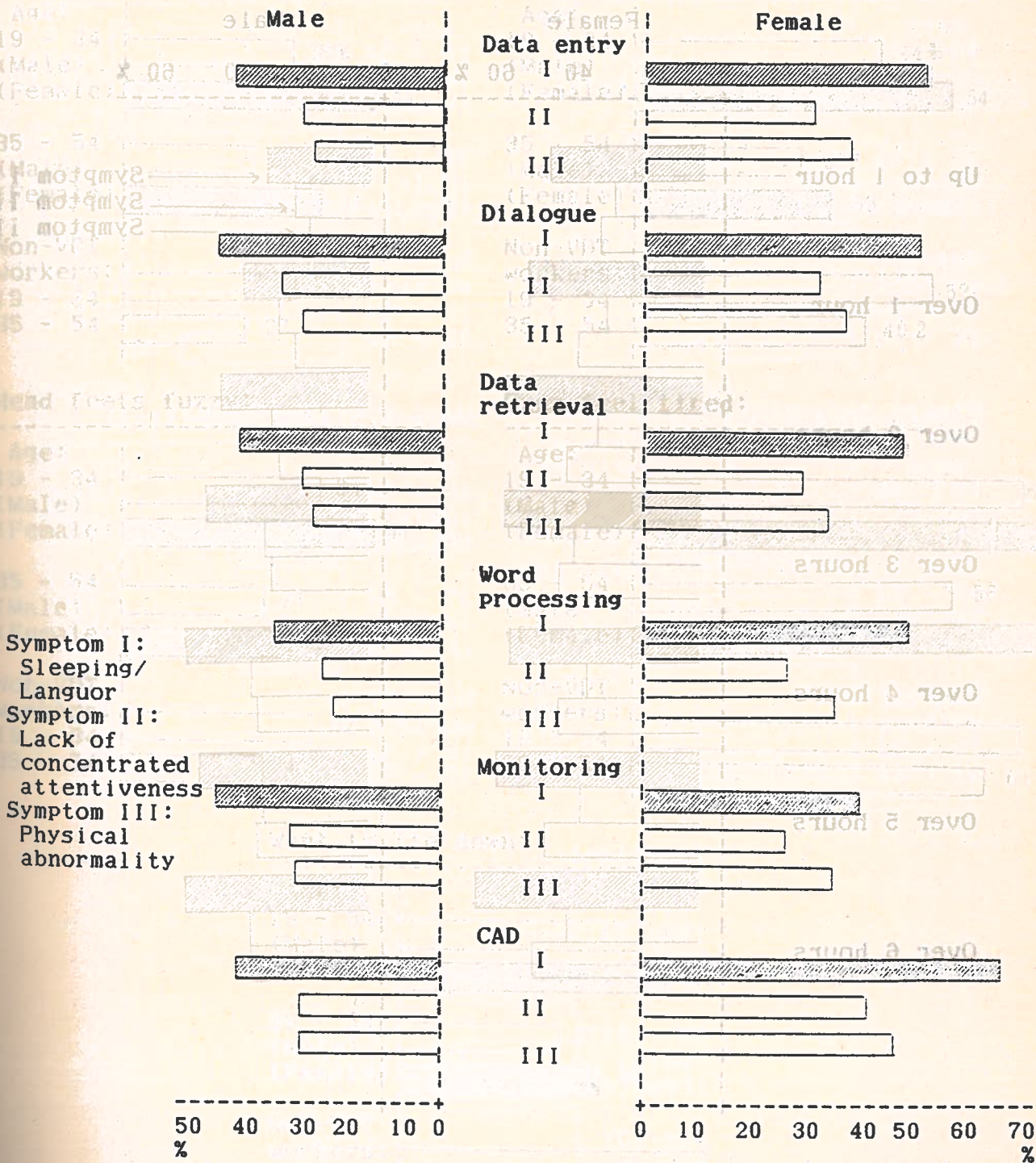


Chart No. 3-19

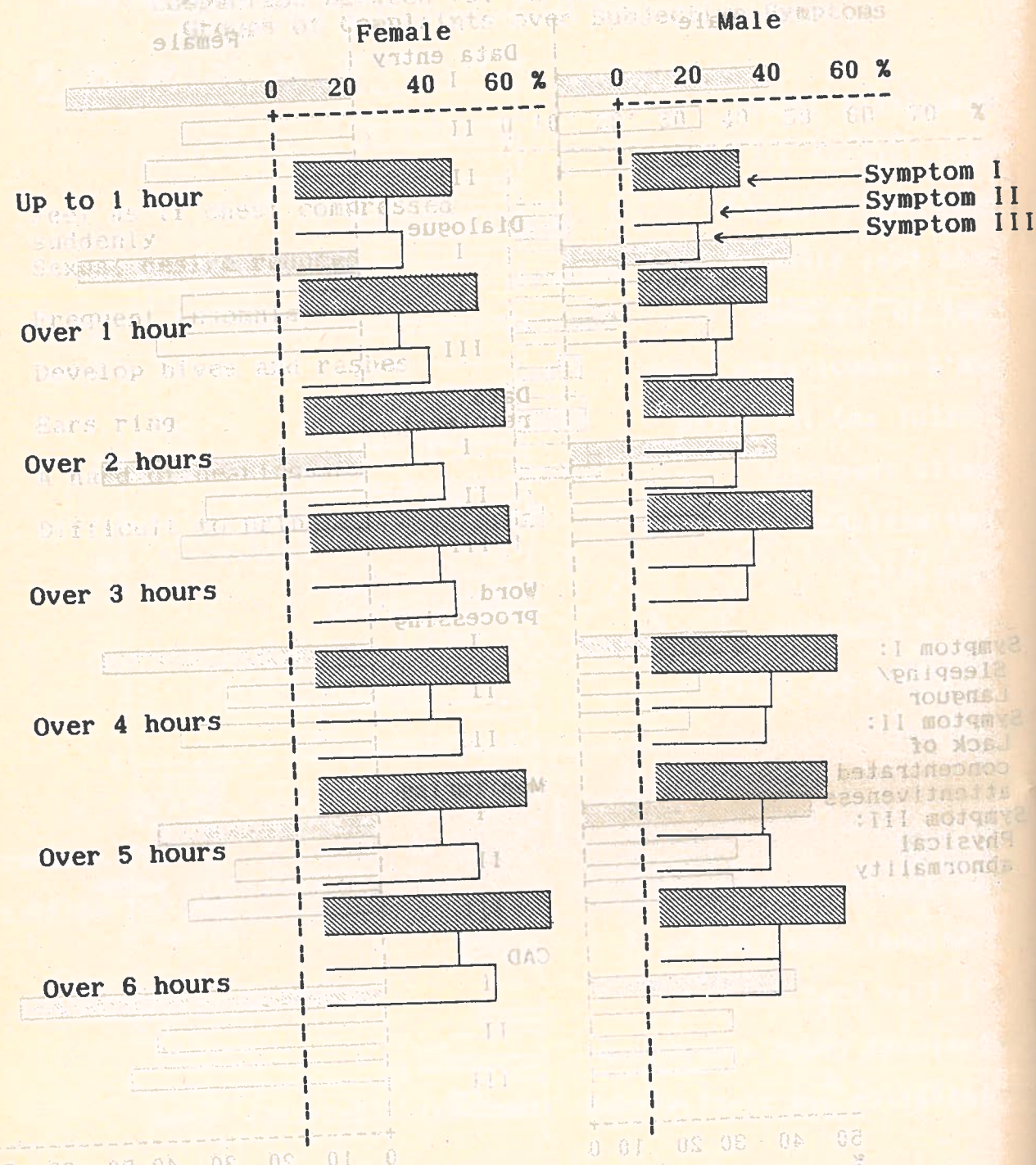
Comparison of Complaints over Subjective Symptoms on
Fatigue of Three Kinds/Men & Women/Type of Tasks



Note: Symptom I - Sleeping/Languor, Symptom II - Lack of concentrated attentiveness, Symptom III - Physical abnormality.

Chart No. 3-20

Changes in Complaints over Subjective Symptoms on Fatigue of Three Kinds/Daily VDT Operation Time

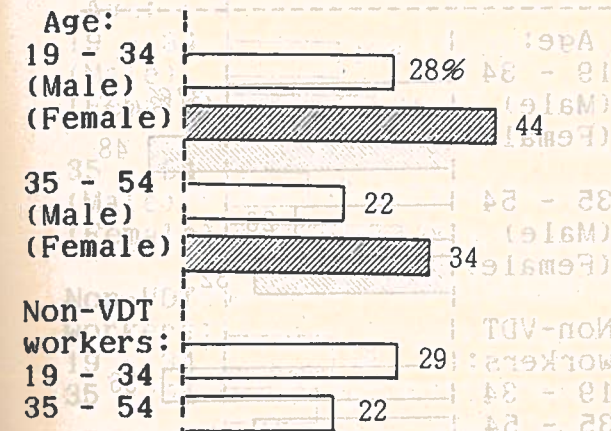


Note: Symptom I - Sleeping/Languor, Symptom II - Lack of concentrated attentiveness, Symptom III - Physical abnormality.

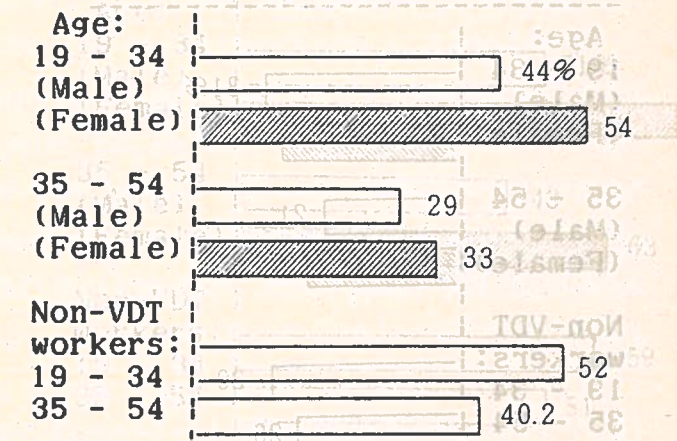
Chart No. 3-21-(1)

Subjective Symptoms on Fatigue I - Sleeping & Languor

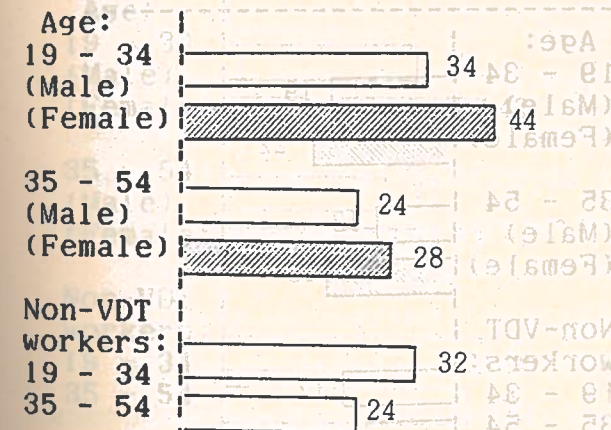
Head feels heavy:



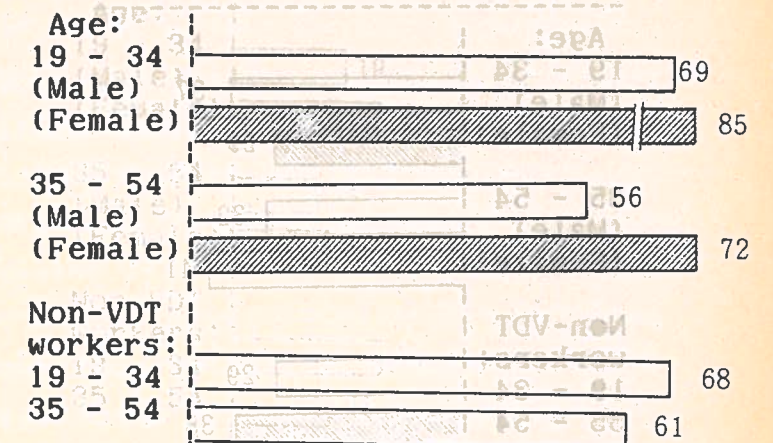
Feel languid all over:



Head feels fuzzy:



Eyes feel tired:



Want to lie down:

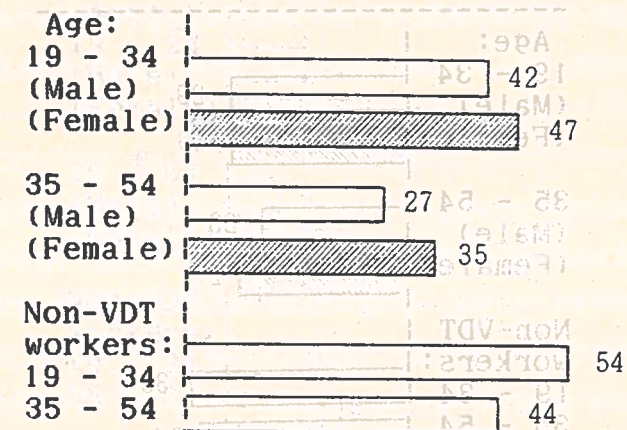
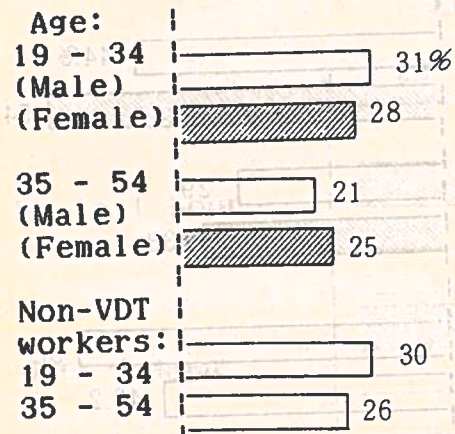


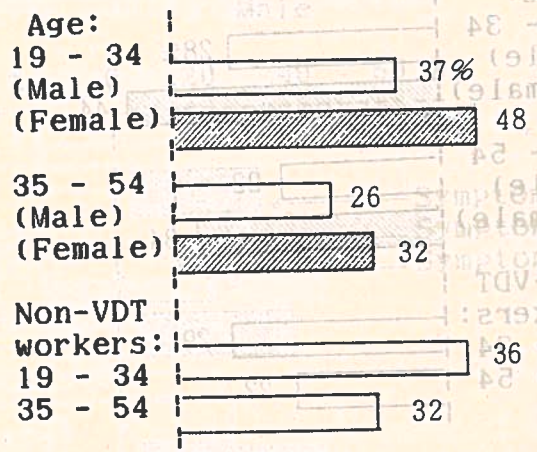
Chart No. 3- 21(2)

Subjective Symptoms on Fatigue II - Lack of Concentrated Attentiveness

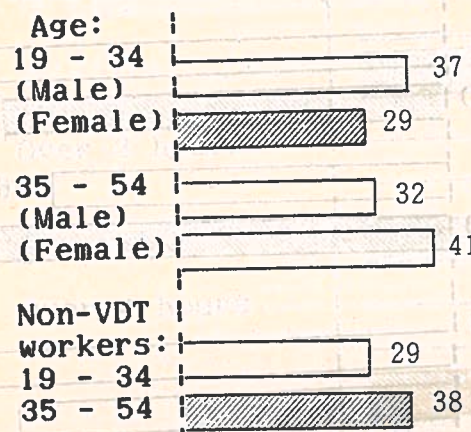
Can't consolidate ideas:



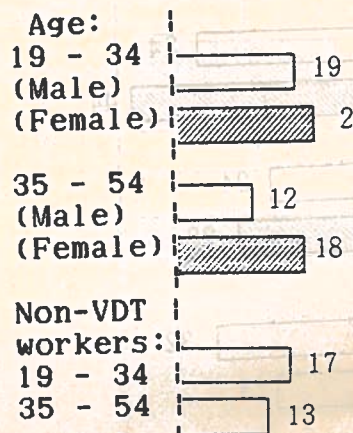
Fretful and irritated:



Easily forgetful:



Many mistakes committed:



Impatient:

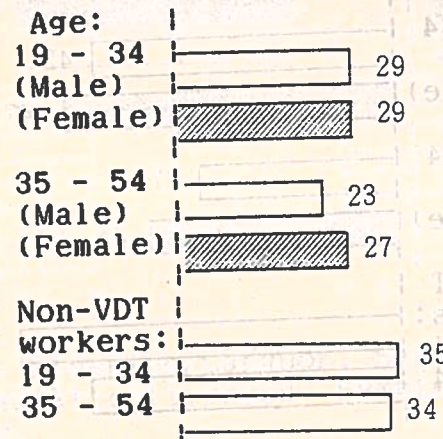
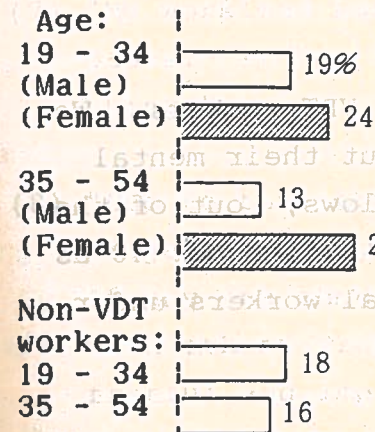


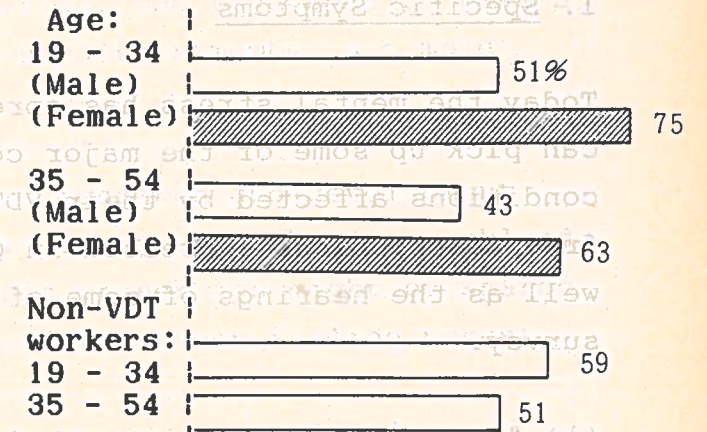
Chart No. 3-21(3)

Subjective Symptoms on Fatigue III - Physical Abnormality

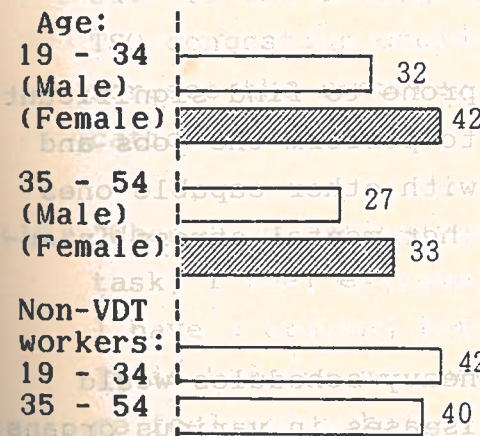
Have a headache:



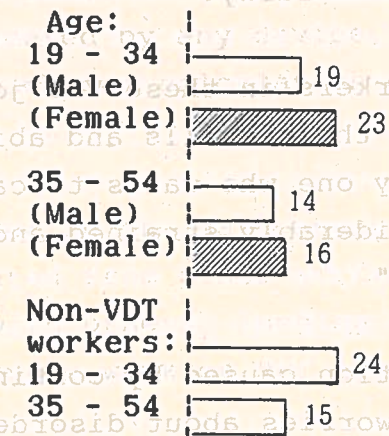
Shoulders get stiff:



Back pain:



Mouth is dry:



Get giddy:

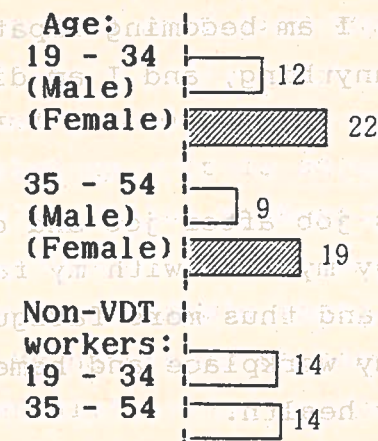


Chart No. 3-21-(3)

CHAPTER IV - VDT Work And Mental Stress

1. Specific Symptoms

Today the mental stress has spread among the VDT workers. We can pick up some of the major complaints about their mental conditions affected by their VDT work as follows, out of the free descriptions expressed in Questions No. 39 and No. 40 as well as the hearings of some of the individual workers under survey.

- (1) "I am fretful and irritated, since I feel always pushed by the work schedules, abnormally tensioned, fatigued with my jobs chronically."
- (2) "The workers in these VDT jobs are prone to find significant gaps in their skills and abilities to perform the jobs and thus any one who wants to catch up with other capable ones is considerably strained and his or her mental stress intensified."
- (3) "Irritation caused by continuously heavy schedules would create worries about disorders or diseases in various organs including in the stomach among others."
- (4) "My neck is so painful, I am becoming impatient with no positive energy to do anything, and I am disgusted with myself."
- (5) "Fatigue remains always job after job and day after day, I have no feeling to enjoy my life with my family even on holidays or rest days, and thus more fatigue is caused ceaselessly both from my workplace and home life, with a unrest feeling about my health."

(6) "I feel always I am controlled by the machine, with a feeling that I am made a part of the machine occasionally."

(7) "My workload has been intensified, too tightened to take a pause. It has lately become hard to remember a simple thing."

(8) "Due to the increasing work on research and development projects, every one is threatened by an excessive workload. If any one should get sick, his or her job might be shared with others proportionately. I have been feeling unrest, fretful and impatient."

(9) Easily got mentally tired when the VDT response got disordered. If the average response could be increased, or if the TSO congestion could be indicated by any device, I might foresee the response through my own calculation of the indication."

(10) "When I am exclusively engaged in the data-entry and retrieval task, I feel extremely isolated from other workers, and thus I have a craving for talks with others, longing for friends. It is bad for me, because longer work on VDT equipment makes me feel melancholic."

(11) "On many occasions I am used to get irritated, and feel like not chattering with my fellow workers often."

(12) "The simple and monotonous job makes me sick, stress increasingly piled up. It is so solitary that I feel always isolated from my fellow workers."

(13) "Since my job is so simple that I am using my brains decreasingly. My nature is getting undesirable, as I am getting more fretful."

(14) "I am just doing what has been directed by others without a chance to know about the whole picture of the workstation and its tasks. I feel uneasy somehow."

It can not be concluded that these complaints as voiced above express always that the workers are suffering from the mental obstacles. But they cover diverse symptoms caused just by excessive fatigue ranging from the evident neurosis to melancholia. What is more important here is the fact that no clear demarcation can be drawn between the healthy (normal) workers and unhealthy (abnormal) ones, even though many of these VDT workers have raised such a series of complaints about mental and nervous failures. Some experts have said the melancholiacs are increasingly found (sometimes a pseudo-melancholiacs) among those who have complaints of "stiff shoulders", "short breath" or "dull feeling". In any event, it can be said that the workers living now in the computerized society are performing their daily jobs at workplaces as if they are the touchy people living in the boundary between the healthy and unhealthy groups.

2. Subjective Symptoms Of Mental Fatigue

Thus, there is another question about how many are complaining of their mental failures among all the VDT workers. It is very hard to grasp any accurate figure. It may give us a very indirect answer to this question if we should look at the question about how the VDT workers are raising their complaints over the items listed in Question No. 38 in the Questionnaire, as regards the "Health Conditions", comprising "Cannot concentrate my ideas", "Fretful", "Forgettable (cannot easily remember a simple thing)", and "Impatient" (Subjective Symptoms of Mental Fatigue survey by Industrial Fatigue Study Party, Japan Industrial Hygienics Association).

About 30% of all the VDT workers under survey have complaints of their mental failures, covering "fretful" and "forgettable" by

3. Development Circuit Of Mental Stress

As shown by the above Section 2, the complaints from the VDT workers over mental failures are not only limited to the mental fatigue symptom.

Complaints of such feelings are raised as "Tension caused by a fear of being pushed by heavy schedules" and "fear of being controlled by machines, with a sensation that I am made a machine part or component so often," (which could be diagnosed as a symptom of "Human Isolation" or "Human Repudiation" - See the following notes.) Also some workers complain of "uneasy" and "melancholic". These mental failures and fatigue can be named the mental stress. In other words, the mental stress represents the tension and resistance the individual workers feel in the course of their efforts to adapt themselves to a given job and working environment. It can be said, if the mental stress is intensified, the affected workers may have possibilities to develop the apparent mental disorders such as malaise neurosis, obsessional neurosis, forgetfulness, delusion of persecution and hypochondria.

(Notes: According to Dr. Takashi Sumioka, Industrial Psychiatrist, the symptom of "Human Isolation" or "Human Repudiation" represents a loss of "a sensation to recognize one's own existence" or the mental condition of "I have a feeling, for example, that I feel myself as a person quite different from what I have used to be previously, like that the machines have the ability to think and feel!")
Nowadays, the VDT workers are struggling against the labor and working conditions radically changed by the ME-aided technological innovation running at a drastically high speed. The mental stress at issue represents that struggle at stake. If the mental stress is looked at from this angle, the circuit of such a mental stress development can be dual as follow: Firstly, the work changing at a high tempo and the various workstation conditions

which cannot respond to such changes, and secondly the impacts caused by the work itself.

The circuit development of mental stress can be pictured as follows, based on the SOHYO's survey through the Questionnaire and hearings from individual VDT workers. First of all, many of the workstations where the VDT workers are located cannot meet with the requirements of the changing VDT work (Table No. 4 - 2, Circuit Development I)

For instance, the VDT work overtaxes the worker's eyes abnormally heavier than the traditional (non-VDT) work, but no measures is taken there to regulate the VDT operation hours for the workers (continuous operation hours, daily operation hours and rest time). The programming tests are concentrated at night, Saturdays or Sundays, while in case of any mistakes in programmings or disorders in systems, the concened workers are called to corrective actions even at night, with the working hours being un-scheduled or scheduled most irrugularly.

This factual situation of these workstations exactly represents the situation of the workers' rights and work regulations not secured or improved but the VDT work alone developed rapidly.

The gap between the VDT work and the workstations is prone to impose the irrational and improper jobs upon the VDT workers.

Such mental failures are accumulated as "chronic fatigue", "insomnia", "deferred marriage", and "no time to enjoy the family life", which all depress their life and which are very common to these VDT workers. It would eventually lead to accumulation of their mental fatigue such as "irritation" and "loss of concentration ability" and also to the tension intensified through the "tight working system not permit any mistake to take place."

It would persistently remain as a vicious circle unless the mental failures should be solved. Worse to say, they can get few consultants to discuss any proper settlement of these unrest and other issues on the job (Chart No. 4 - 2).

Another development circuit is found in the very relations between the VDT workers and their work itself. Nowadays the employers are still sticking to the traditional Taylor system to administer the labor and gain labor productivity. In this respect the author of the "Techno-stress" has stated to the effect that "the major objectives of efficiency analysis are time and thinking. The human's brain and nervous tissue would regulate the threshold of labor productivity. Even an intelligence process, such as a study of work processing for instance, is now measured and standardized. Even though it is getting more clear that the human beings cannot be controlled just like the mathematical equality and formula are set up, the productivity engineers are prone to disregard the invisible human factors, difficult to be grasped, such as personal differentials, understanding, motive and mental state. To the contrary, they try to adapt a worker to a mechanical model or a computer. It seems their idea that the productivity would be authomatically increased without any trouble if the human labor is adapted to the computers. (retranslated from the Japanese edition of the "Techno-stress" by Grage Broad).

It is the increasing trend that the mental work is divided into a judgement-intensive intellectual work and a simple work with a view to improvement of labor productivity, and these two are supplemented respectively by the computerized systems, and thus the VDT worker, with or without an aptitude to the computerized jobs, is eventually exposed to the so-called mental stress (Chart No. 4 - 3).

The development circuits I and II of mental stress, shown by Chart No. 4 - 2 and NO. 4 - 3, are needed to be appreciated comprehensively in view of combination of tasks, workstations and living conditions of the individual VDT workers. The power underlying these two circuits is the force of the computers intensively to deprive the workers of autonomy regarding their jobs and life in order to squeeze the individuals into each pattern of

computers. The worker who has an aptitude to the VDT work shall be forced to an excessive aptitude on one hand, and on the other the worker with such an aptitude shall be suffered from insecurity and adynamia.

Therefore, only the way to settlement of the mental stress would be, for the time being, the thorough reconsideration and rehabilitation of the various workstation conditions and workers' rights to cope with the nature of VDT work, including improvements in working regulations, reduction in working hours, proper manpower allocation, elimination of norm, improvements of working process and environment.

Table No. 4-1

Percentage of VDT Workers Sufferings from Subjective Symptom on Mental Fatigue/Employment Status

	Total of workers	Employment Status			
		Regular	Non-regular	Part-timer	Temporary helper
Grand Total	12,121	11,268	49	172	64
Can't consolidate ideas	27.2%	27.2	18.4	12.8	26.6
Fretful and irritated	36.7%	37.1	38.8	28.5	39.1
Easily forgetful	30.2%	30.4	24.5	29.7	25.0
Many mistakes committed	18.1%	18.2	16.3	14.5	20.3
Impatient	27.3%	27.4	20.4	19.2	23.4

	Total	Employment Status	
		Lent-a-worker	Working at home
Grand Total	214		12
Can't consolidate ideas	43.5 %		25.0
Fretful and irritated	49.5 %		41.7
Easily forgetful	43.5 %		41.7
Many mistakes committed	26.2 %		16.7
Impatient	46.3 %		41.7

Table No. 4-2

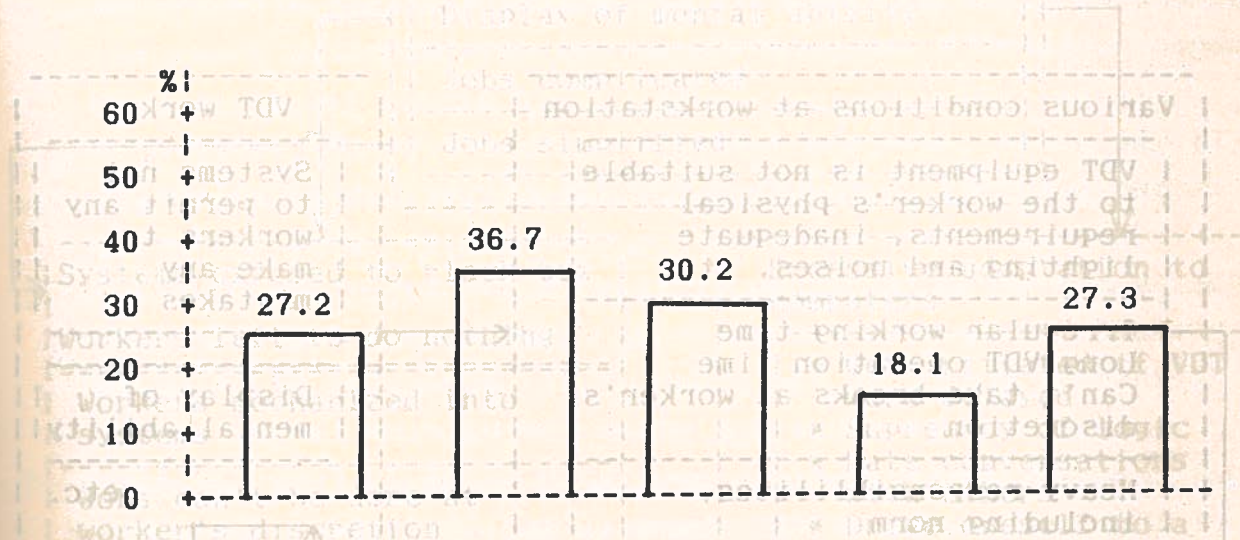
Percentage of VDT Workers Sufferings from Subjective Symptom on Mental Fatigue/Employment Form

	Total Of workers	Employment Form		
		Day shift	Shift work	Regular night work
Grand Total	12,121	9,752	1,978	70
Can't consolidate ideas	27.2%	26.8	29.1	35.7
Fretful and irritated	36.7%	36.5	40.7	47.1
Easily forgetful	30.2%	29.6	35.6	40.0
Many mistakes committed	18.1%	18.4	17.6	30.0
Impatient	27.3%	26.6	32.0	38.6

Symptom	Grand Total	
	Number	%
Can't consolidate ideas	3,284	27.1%
Fretful and irritated	4,441	36.6%
Easily forgetful	3,637	30.0%
Many mistakes committed	2,187	18.1%
Impatient	3,320	27.4%

Chart No. 4-1

Percentage of VDT Workers Suffering from Subjective Symptom on Mental Fatigue



Number of VDT workers	Can't consolidate ideas	Fretful and irritated	Easily forgetful	Many mistakes committed	Impatient
Total (12,121)	27.2 %	36.7 %	30.2 %	18.1 %	27.3 %
Male (7,368)	27.0	32.8	30.4	16.8	26.9
Female (4,489)	27.6	44.4	31.0	20.8	28.7

Chart No. 4-2
Development Circuit of Mental Stress (I)

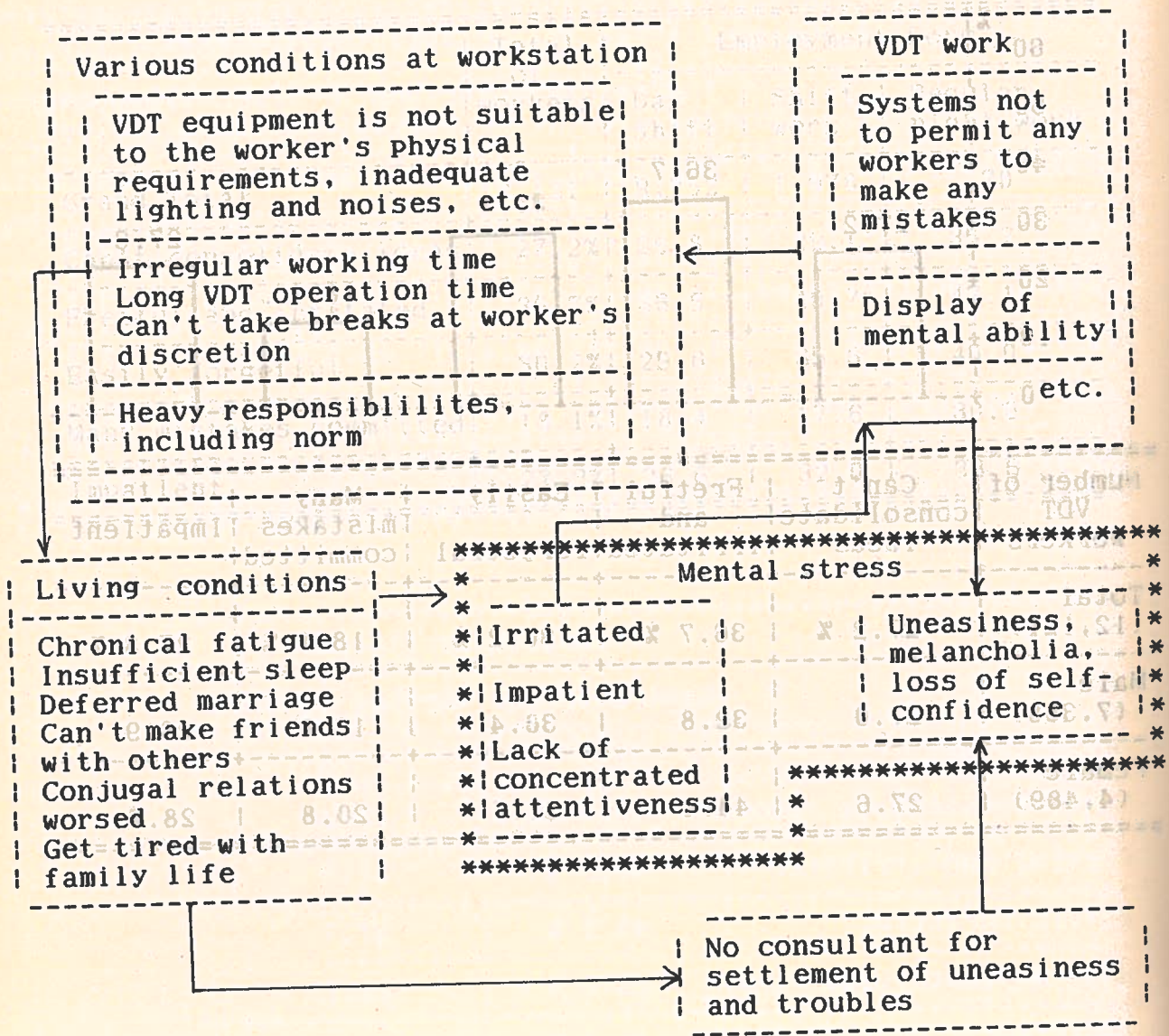


Chart No. 4-3

Development Circuit of Mental Stress (II)

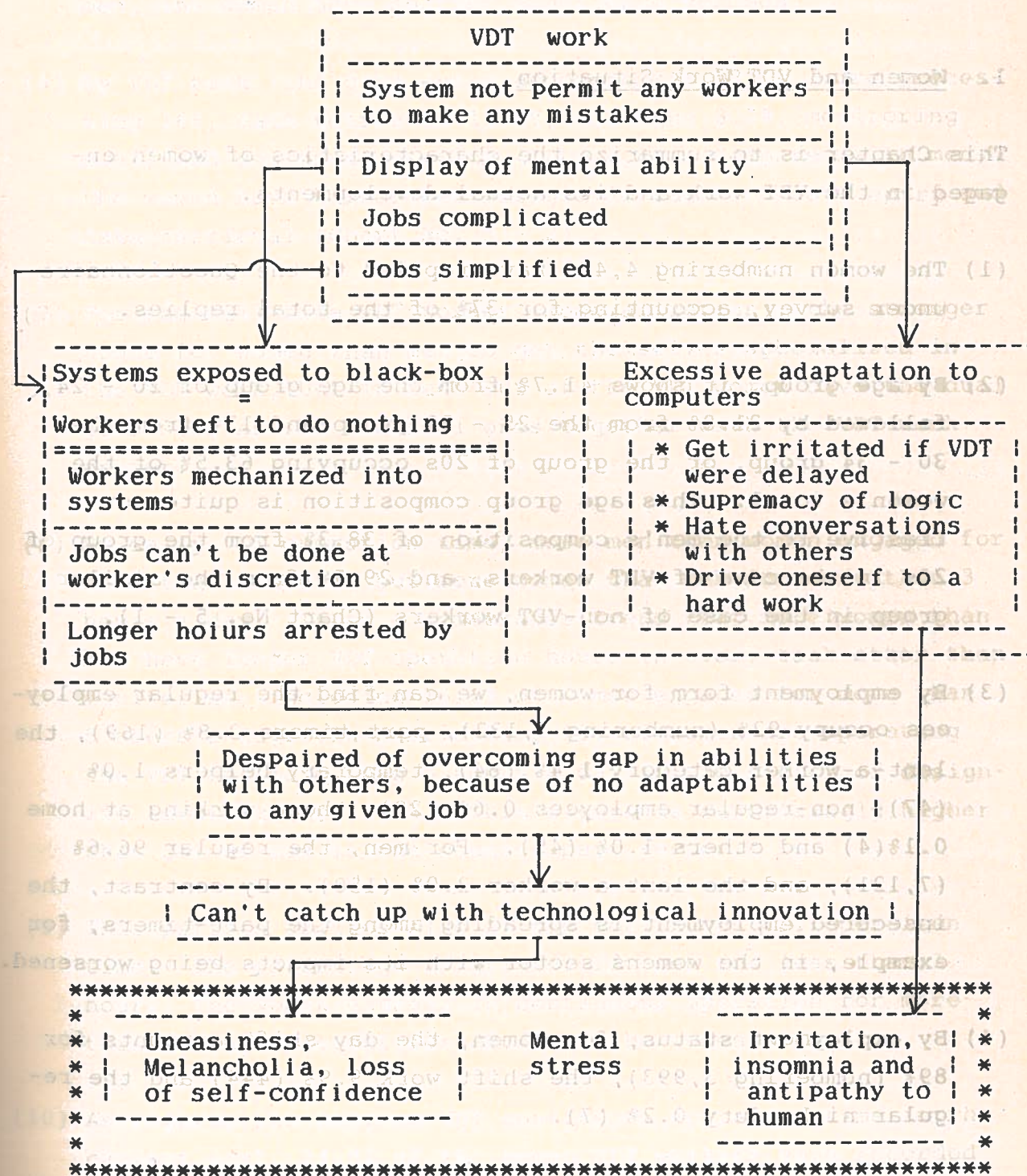


Chart No. 4-3

CHAPTER V - VDT Work with Special Reference to Working Women

1. Women and VDT Work Situation

This Chapter is to summarize the characteristics of women engaged in the VDT work and its actual developments.

- (1) The women numbering 4,489 have replied to the Questionnaire under survey, accounting for 37% of the total replies.
- (2) By age group, it shows 41.7% from the age group of 20 - 24, followed by 21.8% from the 25 - 29 group and 13% from the 30 - 34 group, or the group of 20s occupying 63.5% of the women's total. This age group composition is quite contrastive to the men's composition of 38.3% from the group of 20s in the case of VDT workers, and 29.7% from the similar group in the case of non-VDT workers (Chart No. 5 - 1).
- (3) By employment form for women, we can find the regular employees occupy 92% (numbering 4,132), part-timers 3.8% (169), the lent-a-worker category 1.4% (64), temporary helpers 1.0% (47), non-regular employees 0.6% (28), those working at home 0.1% (4) and others 1.0% (45). For men, the regular 96.6% (7,121), and the lent-a-worker 2.0% (150). By contrast, the insecured employment is spreading among the part-timers, for example, in the women's sector with its impacts being worsened.
- (4) By employment status, for women, the day shift accounts for 89% (numbering 3,993), the shift work 9.9% (444) and the regular night duty 0.2% (7).
- (5) By year of experience, for women, the group of experience of less than 1 year stands at 22.7%, the group of 1 - 2 years at 27.6%, 2 - 3 years at 20.3%, 3 - 4 years at 10.5%, 4 - 5

years at 6.3% and 5 years and above at 10.5%. Compared with men, the women have shorter experience periods.

- (6) By VDT task, the data entry accounts for 58.1%, word processing 16%, data retrieval 13.5%, dialogue 8.2%, monitoring 0.6%, and designing/drawing (CAD) 0.4%. Compared with men, the women have higher percentages in tasks of data entry and data retrieval (Chart No. 5 - 2).
- (7) For the full-time VDT worker (specialization), the stronger trend for women than men to get themselves specialized in the VDT work, but in fact 90% of the VDT women have the dual jobs such as the clerical ones together with the VDT work proper.
- (8) By daily VDT operation time, more men than women engaged for less than 3 hours, but more women than men for more than 3 hours a day. It is a remarkable trend that more women than men have longer VDT operation hours in every task other than monitoring, including 16.6% of women engaged for more than 5 hours a day. In particular, 50% of women are operating the VDT for more than 5 hours a day in the sector of designing /drawing(CAD) task. This figure is surprisingly higher than 23% of men in the counter-part sector.
- (9) This pattern applies also to the continuous VDT operation time. The percentage is greater for men for less than 1 hour. The women engaged in continuous operation for more than 2 hours account for 22.6% of the women's total.
- (10) As regards the maximum VDT continuous operation time in the current past, 24.5% of the women VDT workers have recorded such operation for more than 5 hours. We can easily image what kind of working environment is existed in such a case of longer continuous operation left unchecked at all.

By contrast, women have the trend to meet the peak of such operation during a week, a month and a year than men, and accordingly we can estimate women would be pushed probably by such operation peaks more frequently than men.

(11) As regards the rest pauses, 48.4% of women can take a rest at large, 15.5% can do so occasionally, and 27.9% cannot (15.4% for men). It means the women who cannot take a break accounts for about 30%, or one out of three women workers cannot do so. Here again, the women follow the more increasing trend of being unable to take a break as compared with men.

(12) Watching the VDT screen is greater for women than men in respect to its percentage. The column of "50% of the daily working time devoted to screen watching" represents the women confined to the screen watching job accounting for 53.1%.

(13) As regards the question whether the work norm is set up or not, the women shows again an increasing trend of the norm being fixed, with 26% for them and 21% for men.

(14) Concerning the question whether or not you have ever thought to quit the VDT job, 43.2% of women and 30.7% of men replied "yes".

(15) Concerning the education/training for the workers involved in the VDT work, 64.3% of women said "yes, we have received it", but 56.1% replied such education/training was "insufficient".

All of the above statistics show evidently that women are positioned in the conditions worse than those for men.

When the women are performing the relatively simple and repetitive jobs, but when they must abide by the peak hours and norm

in the tasks of data entry, word processing or data retrieval, they may have difficulties to take a break. Worse to say, in consideration of the overwhelming majority of this work-force being occupied by the young women of the ages of 20s and in concurrent consideration of their health conditions dealt by this report later, we can find an apparent trend to get all the use out of these young women and then discard them, or a throwing away tendency can be seen.

In this context, it may be natural for the women, by 43.2%, have stated "yes, we have once thought to quit working on VDTs."

2. Women Workers And Their Working Environment

(1) There is no particular difference between men and women in respect to their sensitivity to the workstation layout, listing, easiness to watch the VDT screen and noise.

(2) As regards feeling of the air conditions in the workstation, there is a great difference between the two sexes; 35% of men replied "no particular problem" on one hand, but on the other only 15.6% of women replied so. The women have quite a unpleasant feeling to the air conditions in their workstations, and their complaints are great about it accordingly. Any impact upon their health by the air conditions can be estimated same to the both sexes, but the replies show the trend that the men are relatively insensible to the air conditions.

The greatest complaint raised from the women is "terribly heavy smoke from other's cigarette" by 32.6% of them under survey, the second is "excessively dry" by 23.9%, the third is "dusty" by 23.9%, the 4th is "unpleasant draught" by 23.2% and the 5th "excessively strong air-cooling".

3. Women's Health conditions

(1) As regards the degree of labor fatigue, the women feel more fatigue than men. 34.3% of men replied "no particular fatigue is felt" but only 20.7% of women replied so.

	Female	Male	
Acute fatigue	Remaining for a while after work	55.8%	43.4%
	Remaining until bed-time		
Chronic fatigue	Remaining even after getting-up	19.9%	19.2%
	Remaining always		

(2) As regards subjective symptoms of eyes, the stronger complaints are raised from women in respect to almost all kinds of subjective symptoms, also in a greater number.

The same is true with the worsened eyesight and abnormalities felt by the workers in relations to the VDT work.

(3) As regards conditions of various parts of the body, the complaints are overwhelmingly raised from women, including the complaint of "neck, right side" by 57.6% of women under survey, "shoulder (R)" by 73.5%, "shoulder (L)" by 65.1%, "back" by 52.7%, "waist" by 52.0%, and others over stiffness, pains and languidness, while it is guessed the stiffness in the shoulders and pains in the back are becoming chronically spread among the VDT workers.

(4) As regards complaints of subjective symptoms of some parts of the body, they are overwhelmingly raised from women. The first one concerns the "eyes getting tired" by 82.2%

(64.5% for men), the second "shoulders getting stiff" by 72% (48%), the third "the whole body getting dull" by 49.7% (38%), the 4th "irritated" by 44.4% (32.8%), the 5th "want to lie down" by 44.3% (36.3%), the 6th "feel heavy in the head" by 41.7% (30.2%), the 8th "back pain" by 39.4% (29.9%), the 9th "headache" by 32.6% (16.4%) and the 10th "impatient" by 28.7% (26.9%).

The above phenomena are also evident among the workers of the ages of 20s who are supposed to be physically most healthy, and therefore they are attributed not to the workers' ages but to the VDT work equipments.

All of the above would prove clearly that the mental and physical fatigue has been more developed among women, and this is estimated to have been caused by the various working condition for women worse than those for men in the VDT workstations.

4. Demands from Women Working On VDT

- (1) The women, by 31.6%, state that the management is likely to impose the VDT jobs upon them. By contrast, only 6.4% men believe so, and thus it means there is a big gap between the two in their concept to the issue.
- (2) As regards the persons or counsellors with whom the VDT workers would consult over the VDT jobs and workstations, the first is their fellow workers (46.0%), the second is their supervisors (40.1%), the third is their trade unions (10.0%) and the 4th is their friends (4.7%).
- (3) As regards the question whether their working or living conditions have been changed, the men replied "their jobs have become complicated/sophisticated" (25.9%), while the women replied, by contrast, "always they feel they are

pushed by the jobs, leading to no latitude allowed" (25.8% on the average). It seems true that the jobs given to women are increasingly constraint but monotonous.

The complaints from women are ranked as follows: the first is "workload has been increased" (33.8%), the second "feel like being driven by jobs always" (28.9%), the third "cannot do the job with a feeling of latitude allowed" (22.7%), the 4th "longer hours bound by the jobs" (20.5%), and the 5th "the jobs becoming harder" (18.5%).

(4) The following is the list of improvements the women workers want to get realized, in view of the above-listed complaints.

Priority No. 1 - Improvement of air and temperature in work-stations	53.1%
No. 2 Rest-room where they can lie down	23.2
No. 3 More rest time	19.7
No. 4 Improvement of working procedures and methods of VDT tasks	19.4
No. 5 Improvement of lighting	17.2
No. 6 Improvement of human relations	17.2
No. 7 Shorter working hours	16.6
No. 8 Workload to be reduced	12.5
No. 9 Reduce noises	11.3
No. 10 Transfer to other workplaces	10.7

On the other hand the working women who have ever experienced any abnormal conditions during their pregnancy and/or parturition have the wishes as follows, with the most emphasis on the wish for "a rest-room where they can lie

down freely".

Priority No. 1 - Improvement of air and temperature in work-stations	47.3%
No. 2 Rest-room where they can lie down	41.8
No. 3 More rest time	25.3
No. 4 Shorter working hours	24.2
No. 5 Improvement of lighting	18.7
No. 6 Reduce noises	18.7
No. 7 Improvement of working procedures and methods	17.6
No. 8 Improvement of human resources	15.4
No. 9 Improvement in conditions for enabling workers to take a sick leave	14.3
No. 10 Need person(s) to whom workers can submit complaints	7.7

(5) Menstruation, Pregnancy and Parturition

Question No. 42 on the Questionnaire for this survey has the following questions to the female workers.

- | | |
|--|-------------------------------|
| 1 Menstruation: | 1. Irregular |
| | 2. Not irregular |
| | 3. Others |
| 2 During the period | 1. Cramps involved |
| | 2. Cramps not involved |
| | 3. Others |
| 3 Leave for menstruation (Physiological leave) | 1. Every period, it is taken. |
| | 2. Taken by about 50% |
| | 3. Taken sometimes |

4 Have you become pregnant since you started with VDT work?

1. Yes 2. No

5 In case of "Yes", did you experience any of the below-listed abnormalities during pregnancy?

1. Toxemia of pregnancy
2. Near miscarriage
3. Others
4. Normal delivery

6 Was any abnormality in your delivery experienced after starting with the VDT work?

1. Miscarriage
2. Premature birth
3. Profuse bleeding
4. Caesarean section
5. Still Birth
6. Others
7. Normal delivery

5. Menstruation, Pregnancy And Parturition

(1) Menstruation as Health Barometer

Menstruation is one of the physiological barometer for women, and cramps during the period. nevertheless, not all of them are used to take the menstruation (physiological) leave (entitled under law), or the leave consumption percentage is low, and corincidentally ther are many women remaining in the chronic fatigue and overworking, leading to quite a deteriorated security of the maternity. This is found attributable substantially to abnormal pregnancy and parturition.

a. As regard the disordered menstruation, the women numbering as many as 23.8% of all under survey are suffering from their "irregular menstruation". By age, as shown by Chart No. 5 - 3, the younger group has more complains as such; 35% of them during the ages of 10s, 27.5% during the ages of 20 - 24, 24.9% during 25 - 29 and 21% during 30 - 34. Usually the irregular menstruation is attributed to mental stress, antonomic ataxia and it is also prone to occur when they are in the unhealthy conditions.

It may be true that the married women and others, as they gain age, can keep the physiological functions stable, with less menstruation irregularities, accordingly. The record showing that one out of three during the ages of 10s and one out of four during 20s are suffering from their irregular menstruation may be an evidence to indicate that the chronic fatigue is worsened for the working women of ages during the latter half of 10s and during those of 20s who are supposed to be most healthy and sound. This can also be estimated in view of the difference between the VDT and non-VDT workers in respect to the irregular menstruation, more for the former and less for the latter.

By VDT task, the irregular menstruation stands at 50% among the women engaged in the task of designing/drawing (CAD), 27.6% in monitoring, 24.4% in data entry, 23.9% in data retrieval, 22.6% in dialogue and 21.7% in word processing.

- b. As regards cramps of menstruation, 52.2% of them on the average complained of "cramps going together", and by age 58.8% of them with cramps going together during the ages of 25 - 29, 57.2% during 20 - 24, and 54.9% during 30 - 34. Higher the age, less the cramps. No particular difference is found due to task types (Chart No. 5 - 4).
- c. As regards the quesiton whether they actually take the menstruation (physiological) leave or not, the survey findings show, inspite of such complaints as described in the above sub-paragraphs (1) and (2), 13.6% of them taking the leave every period, 6.1% taking about 50% the entitled leave, 25.4% occasionally, and more than a half of the total workers stated that they "cannot take it", "do not take it" or "no system practised to take it" (Chart No. 5 - 5)

The percentage of taking the leave, by age, shows the younger women take less, and this tendency coincides with the trend of more irregular menstruation and more cramps during the periods among the younger.

By VDT task, those in the designing/drawing (CAD) task take the leave least and only 31.3% of the total in all tasks take the leave, including those who take it occasionally.

As chart No. 5 - 5 shows, the consumption rate of the Physiological Leave is extremely low among the VDT workers as compared with the non-VDT. This and that will show you the true picture that more the VDT devices introduced in the workplaces more the VDT worker's health endangered, and that, worse to say, harder for them to use their essential right to protect the maternity.

(2) Pregnancy and Parturition Abnormality

a. The workers under survey who have ever become pregnant after their starting with the VDT work number 250, and 67 of them (27.5%) stated they experienced some kinds of abnormality. The breakdown of these experienced covers 18 persons suffered from toxemia of pregnancy, 35 from acute miscarriage and 35 from other symptoms. (Possibly duplicated in these statistics under survey) A majority of them is attributed to anemia, absolute fatigue, general weakening, general swelling and near miscarriage.

b. The workers who have ever experienced child-delivery during employment number 250, and 51 of them (21.0%) were involved in some kinds of abnormality. Their breakdown covers 8 suffered from miscarriage, 8 from

premature birth, 11 from Caesarean operation, 5 from still birth, 8 from profuse bleeding, and 17 from other difficulties. The others include a premie and placenta separation.

c. The total is 250 persons who have experienced pregnancy and/or parturition since they started with the VDT work, 91 out of whom have experienced certain abnormal developments in connection with such pregnancy and parturition, the ratio being as high as 36.4% indeed.

(3) What are contributing factors to abnormal pregnancy and parturition?

a. Your attentions are invited again to the Question No. 42 as mentioned earlier. The purport is to find out "whether you have ever experienced pregnancy and/or parturition or not." The column "no abnormality" (Normal development) is quite self-explanatory, but it is subjected to the discretion of the person to answer the question, as a matter of a device to fill out the given column. It means therefore that the "abnormality" of pregnancy/parturition is only based upon the answerer's judgement. Our experience shows that the number of the answers of "abnormality" would be increased if they were all based upon the doctors' diagnoses. Since our report is based on the answerers' own discretion, it should be noted that it is less covered by the medical certificates involved in the issue, and that we believe accuracy of the report's contents enriched accordingly.

The details of abnormality at issue are fully listed in Question No. 42 already, but for a convenience of our discussion they may be reproduced here as follows.

In case of pregnancy - Toxemia of pregnancy, near miscarriage and others

In case of parturition - Miscarriage, premature birth, profuse bleeding, Caesarean birth, still-birth and others

Other details cover, according to the repliers, such symptoms as anemia, absolute fatigue, general weakening, general swelling, near miscarriage in respect to pregnancy, and premature baby, pelvis position and placenta separation and others in connection with parturition.

- b. Based upon the above statistics, the ratio of abnormality involved in pregnancy/parturition during employment on the VDT work can be summarized as follows:

Total Number of Women Answered	4,489 persons
Pregnancy/parturition experienced (A)	250
Abnormality involved (B)	91
Ratio of abnormality $\frac{B}{A}$	36.4%

- c. The VDT working conditions involved in the above listed abnormality can be summarized as follows.

1 Longer the VDT working time a day, more the abnormal cases occurring. The ratio of abnormality for the workers experienced pregnancy/parturition, according to the daily VDT working hours, which is called the abnormality rate, is higher as the daily VDT working time becomes longer. The rate is 25% for the women on the job for less than one hour a day, but it goes up to 63.6% as the working time increases to 6 hours a day. (Chart No. 5 - 6)

2 This applies also to the continuous VDT working time. If this working time is prolonged, the abnormality increases, and the abnormality rate follows up trend. The rate remains at 27% while the continuous VDT operation

runs for less than 1 hour, but it reaches 60% in case the operation runs for more than 5 hours (Chart No. 5 - 7).

3 Question No. 11 is aimed at the rate of VDT screen watching period to be figured out though a mathematic work on "If you are on the VDT job, and its total operation time a day is made 100, what percentage of the total is assigned to your VDT screen watching?" Higher this rate of screen watching, more the abnormal cases involved in pregnancy/parturition (Chart No. 5 - 8).

Relations Between VDT Screen Wating Period and Abnormality Rate of Pregnancy/Parturition

Screen watching rate	No. of workers experienced pregnancy/parturition	No. of workers involved in abnormality	Abnormality rate (%)
Up to 10%	11	3	27
" 20	14	5	35
" 30	19	6	31
" 40	10	3	30
" 50	41	14	41
" 60	17	7	17
" 70	18	4	23
" 80	50	21	42
" 90	28	15	53
" 100	4	2	50
Unknown	37	11	
<u>Total</u>	<u>250</u>	<u>91</u>	<u>36.4</u>

d. For the workers involved in the abnormality of pregnancy/parturition, their working environment surrounding the VDT work can be summarized as follows.

1 A slightly high rate of abnormality can be found among those working in the special VDT workstation and the VDT work corner set up within the common workplace.

2 A higher rate is found among those complaining of difficulties in the screen watching.

3 A higher rate is also found among those complaining of difficulties in VDT operation due to glare and flicker.

4 A higher rate is found among those more sensitive to noise.

5 As a characteristic compared with the total women working on VDT operation, 26.4% of those experienced pregnancy/parturition abnormality are more sensitive to and have more unpleasant feeling to the heat radiated from the VDT devices (12% in case of the total women) in respect to the air conditions in the VDT workstation.

6 A higher rate of pregnancy/parturition abnormality is found among those who are dissatisfied with the workstation layout, with their specific complaints of "the working space is narrow", and "The desk height is unadjustable".

7 The similar rate is found among those whose fatigue has been badly intensified due to the usual VDT work (Chart No. 5 - 10).

e. Women suffered from abnormality and their menstruation.

A higher rate of pregnancy/parturition abnormality is essentially found among those complaining of irregular menstruation as well as cramps during the periods.

	Women experienced abnormal pregnancy/parturition	Total of Women
Irregular menstruation	36.3%	23.7%
Cramps during periods	61.5%	52.1%

Regarding the menstruation leave, the workers experienced pregnancy/parturition abnormality are taking the leave; 33% of them "taking it every period", 7.7% "taking it by about 50%" and 26.4% "taking it occasionally", which are all higher than those taken by the total workers on the average running at 13.6%, 6.1% and 25.4% respectively. This will probably represent the fact that they could not maintain their health unless they should take such a physiological leave. Also it can be admitted that they could have children because they are working at the workstations where they could take that leave at any cost. If such a leave is difficult for them to take, and then we can easily assume, at such a workplace, they would also encounter with more difficulties in taking their maternity leave, adapting the flex-time schedules (for reduction of working time and workload) and enjoying the right to nurse their babies during the official time which would eventually lead to worsening their employment conditions while they work, deliver their children and cater for them.

f. The female workers who have ever thought to quit working on VDTs account for 50.6% of those experienced pregnancy/parturition abnormality, which is higher than average

rate of 43.2% among the total female workers. This is resulted from their discontent with the VDT tasks and working conditions.

- g. It must be added in this connection that there is no particular difference found between those who experienced pregnancy/parturition abnormality and others who did not do so, such elements as the ages, years of experience in VDT work and norm (Chart No. 5 - 11).

6. Summary of This Chapter

- (1) VDT work and female workers in respect to fatigue and health deterioration.

Fatigue and health deterioration of the women in the VDT work have been intensified more than the men. The causes for such developments could be sought into the way in which the women are forced to work and the conditions of the VDT work.

The fact is that even the women who are supposed to be most healthy during their ages of 20s are suffering from excessive fatigue, and that they do have the most complaints of irregular menstruation. It is known to us that if any lesion in the neck and/or arms is developed it would be resulted in an autonomic ataxia, irregular menstruation or slight melancholia and it cannot be denied that the rate of complaints raised by the VDT workers regarding their irregular menstruation as discovered from this Questionnaire and Research Study is exactly a warning signal of frequent occurrence of the fatigue-oriented vocational disease. The chronic fatigue has been diffused and the potential patients suffering from such vocational diseases are increased. If these were left discarded, we should be driven to the era to find ourselves beset by the frequently occurring vocational diseases once again.

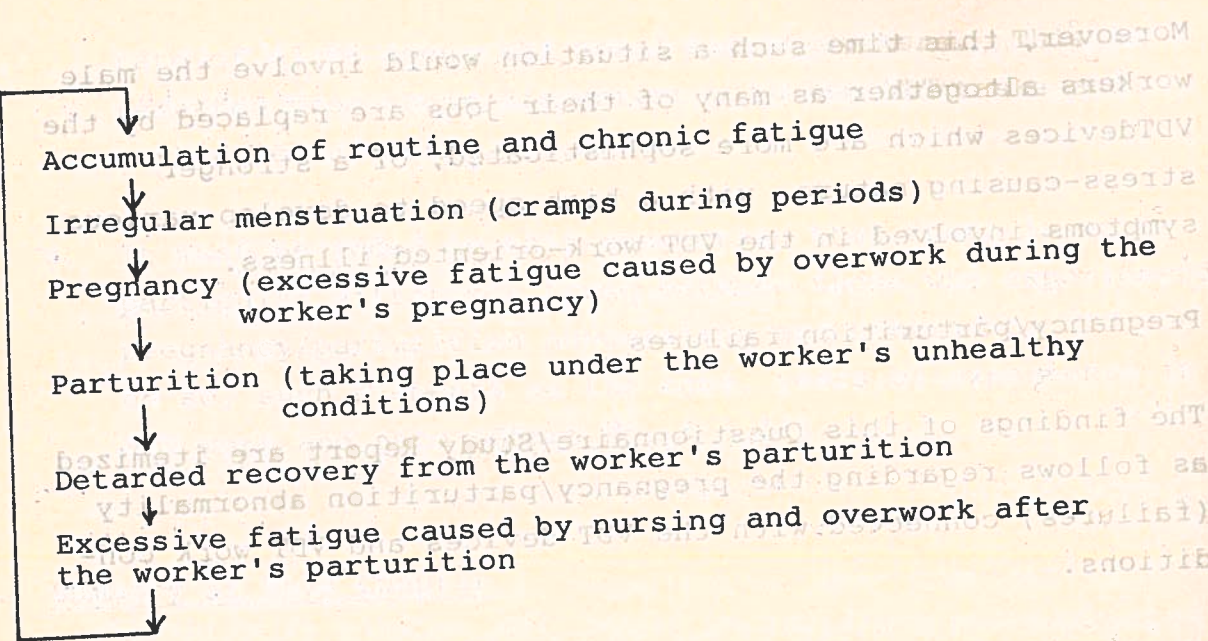
Moreover, this time such a situation would involve the male workers altogether as many of their jobs are replaced by the VDT devices which are more sophisticated, of a stronger stress-causing nature, with a high speed to develop various symptoms involved in the VDT work-oriented illness.

- (2) Pregnancy/parturition failures

The findings of this Questionnaire/Study Report are itemized as follows regarding the pregnancy/parturition abnormality (failures) connected with the VDT devices and VDT work conditions.

- a. The rate of such failures is increased as the VDT daily or continuous operation hours are prolonged.
- b. The rate of such failures goes up for the workers with the longer hours of VDT screen watching.
- c. The rate of such failures is on the increase if they have more difficulties in screen watching, other VDT tasks, accompanying heavier noises in the unpleasant air conditions.

Moreover, such pregnancy/parturition failures would be worsened additionally by the following conditions, as they would circle round by themselves.



In addition, the following conditions would increase the rate of pregnancy/perturition failures of the workers on the VDT tasks.

- (1) Facing the VDT devices for long hours and periods
- (2) Tension and pressure on abdomen caused by the unnatural posture of the worker on the VDT job.
- (3) Brain-intensive work required by overcrowded operation with a high tension
- (4) Excessive stress and poor human relation
- (5) Workstations where the workers' rights can not be exercised, including their maternity protection.
- (6) Impacts upon a unborn child of noise caused by low radio frequency
- (7) Chemical and biological factors involved in air contamination at VDT workstations (caused by tobacco and ozone emitting from cameras)

- (8) Physical factors such as radiation from ionization, radiation from ionization, radiation from non-ionization (radio wave), electric wave and static electricity.

We can find the voice in the remarks coloumn for free opinions in the Questionnaire from the women who have already experienced pregnancy/parturition or who want to have children from now that "Our fears can not be wiped out concerning impacts from radiations, even though the causes and consequences of these factors upon the workers are not yet identified." A certain woman expressed her opinion in the column to read as follows:

"One of my fello-workers had a miscarriage. I am told, according to the information from western countries, that problem is there to give any impact upon a unborn child. I am wondering whether I should stay on this VDT job or not. I feel unrest. I doubt very much it would not make us abnormal or distressed if we should keep watching the VDT screens on the job. Men might not feel any fear about the job because they do not bear a child, even so, the VDT job is still no good. Why we cannot stop working on the VDTs at least until it is definitely identified safe for us to keep staying on the VDT work.

Chart No. 5-1

Feature of Women on VDT Work by Age Group

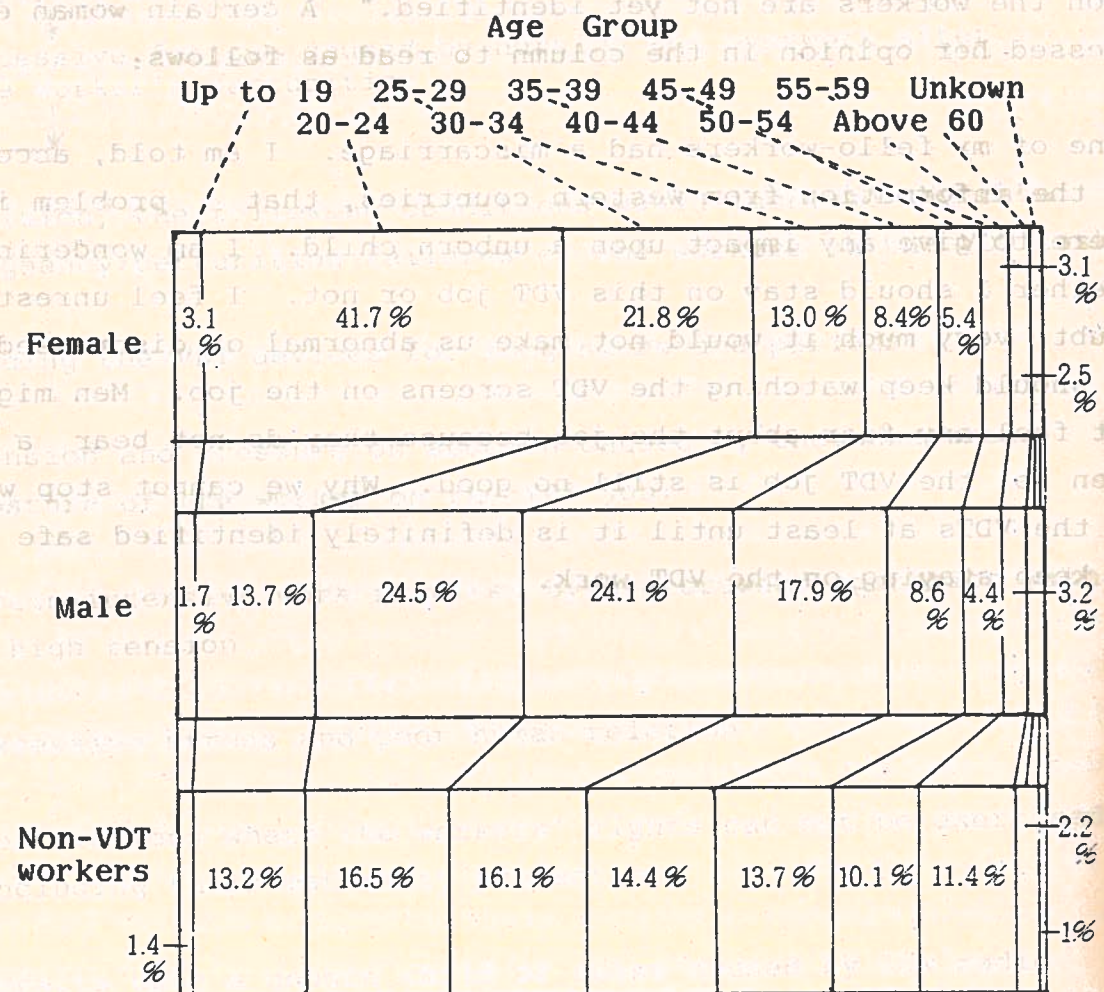


Chart No. 5-2

Characteristics of Women Workers by VDT Task

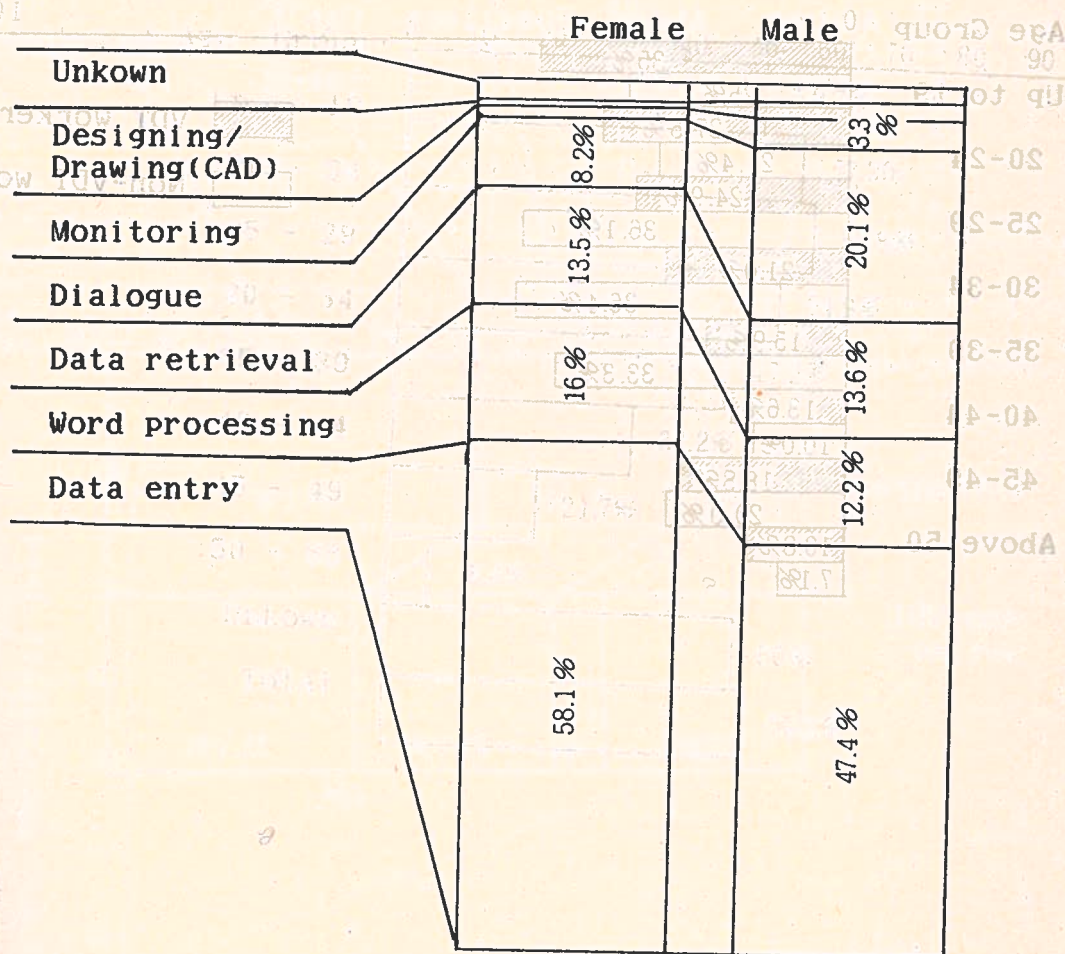


Chart No. 5-5

Menstruation Leave Taken

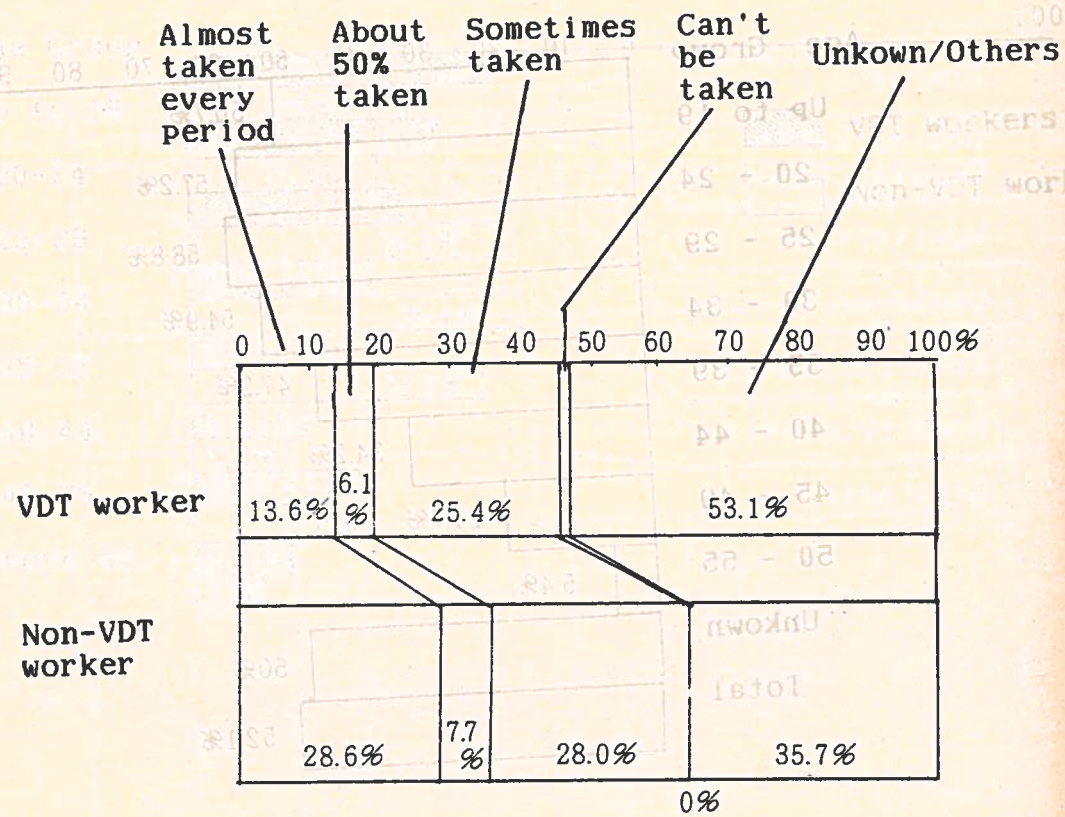


Chart No. 5-6

Rate of Abnormal Pregnancy/Parturition Per Daily VDT Operation Time

Daily VDT Operation Time (hrs.)	No. of Women with Pregnancy/Parturition (A)	No failure in Pregnancy/Parturition (B)	Failure in Pregnancy/Parturition (C)	% (C/A)
Up to 1	66	49	17	25
2	46	33	13	28.2
3	28	22	6	21.4
4	41	22	19	46.3
5	25	12	13	52.0
6	16	9	7	43.7
Above 6	22	8	14	63.6
Unkown	6	4	2	-
Total	250	159	91	36.4

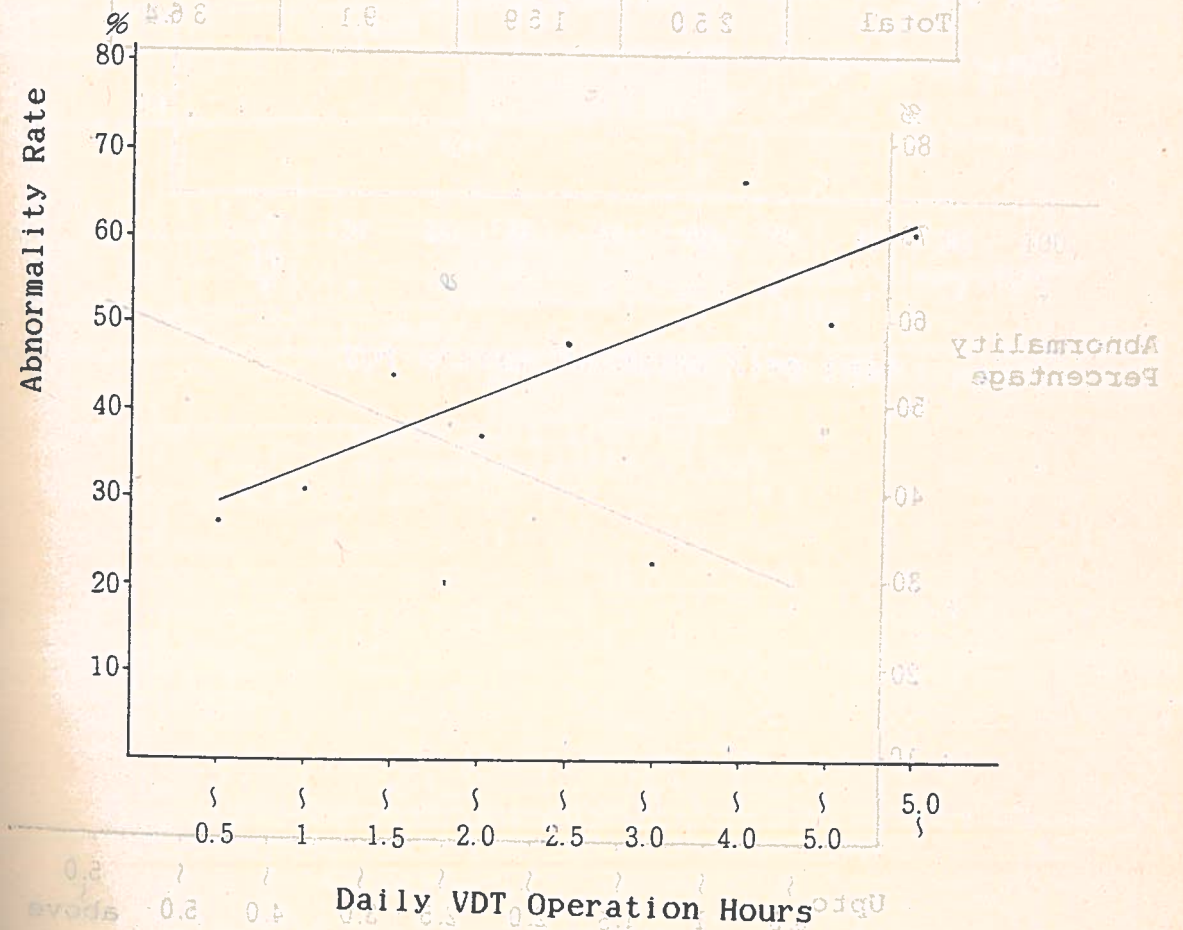


Chart No. 5-5

Menstruation Leave Taken

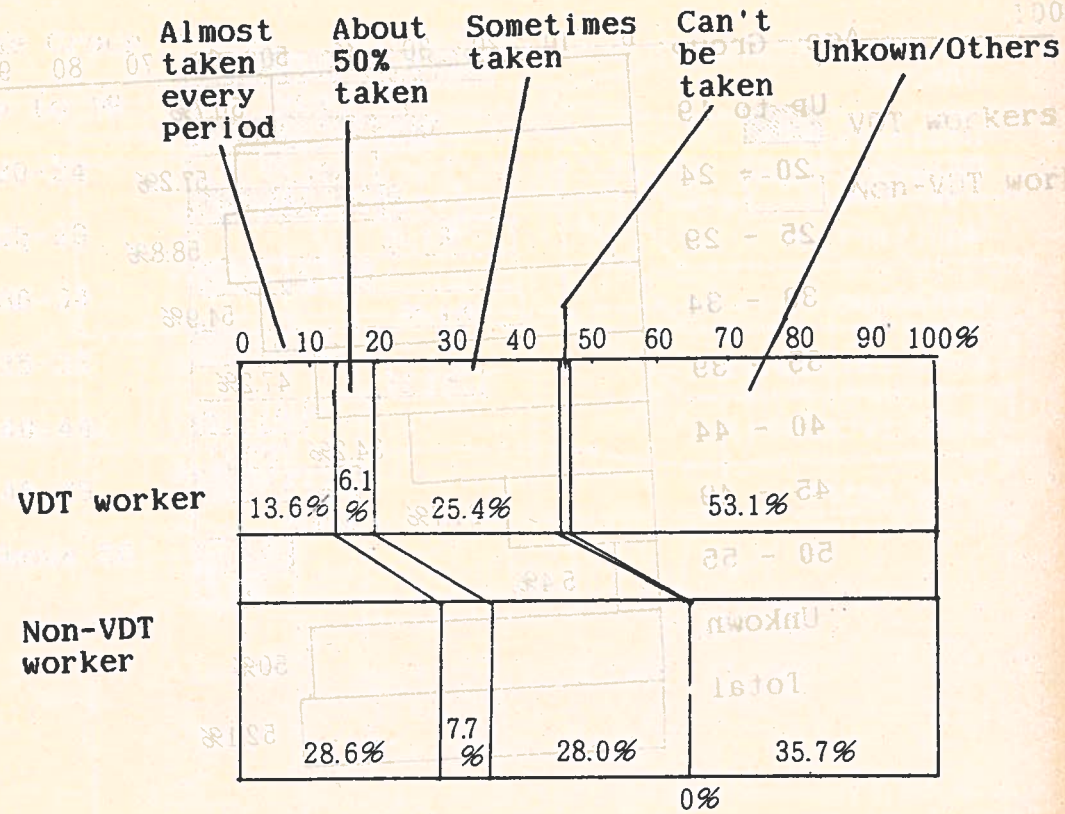


Chart No. 5-6

Rate of Abnormal Pregnancy/Parturition Per Daily VDT Operation Time

Daily VDT Operation Time (hrs.)	No. of Women with Pregnancy/Parturition (A)	No failure in Pregnancy/Parturition (B)	Failure in Pregnancy/Parturition (C)	% (C/A)
Up to 1	66	49	17	25
2	46	33	13	28.2
3	28	22	6	21.4
4	41	22	19	46.3
5	25	12	13	52.0
6	16	9	7	43.7
Above 6	22	8	14	63.6
Unkown	6	4	2	-
Total	250	159	91	36.4

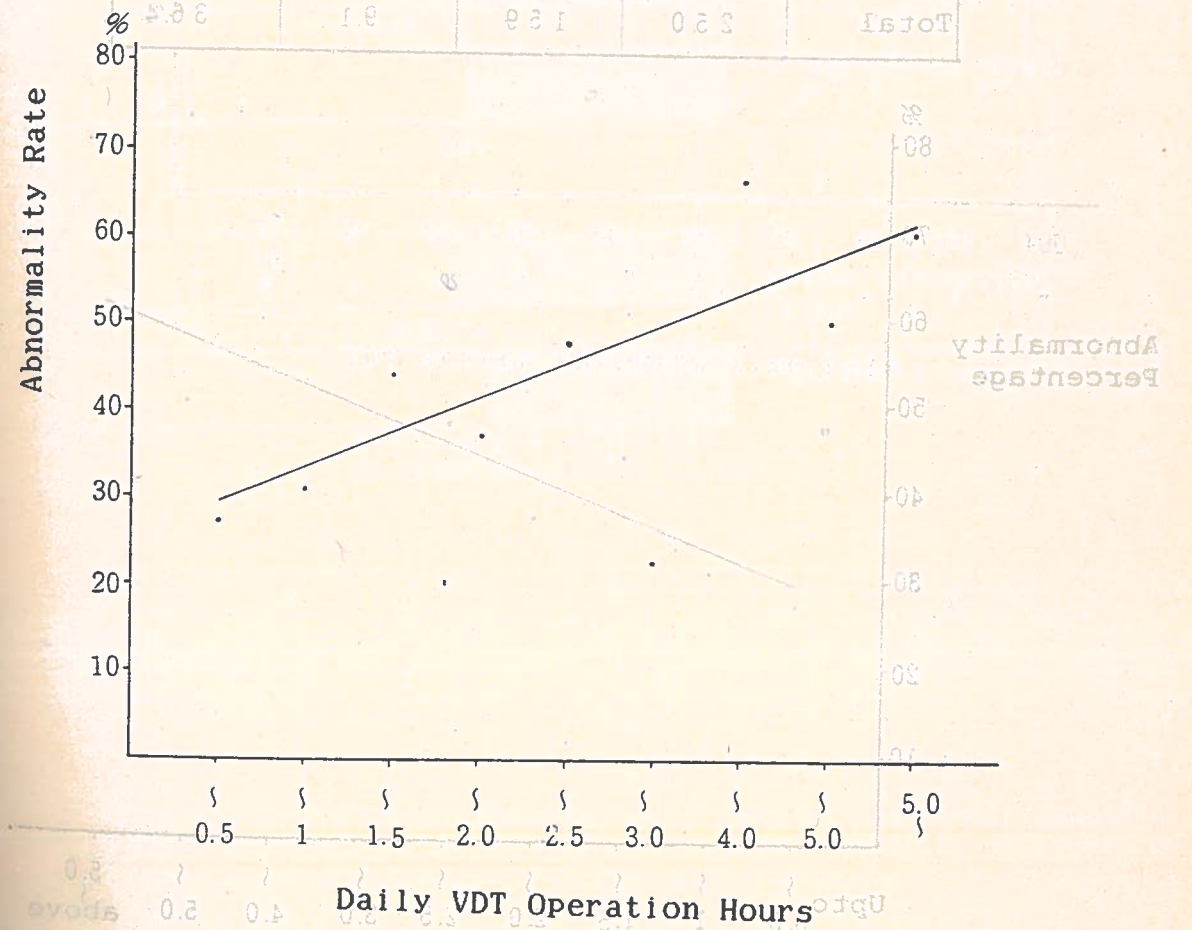


Chart No. 5 - 7 Rate of Abnormal Pregnancy/Parturition Per Continuous VDT Operation Time (%)

Continu- ous VDT Operation Time	P/P Rate During VDT Work (A)	Without Abnormal- ity (B)	With Abnormal- ity (C)	% (C/A)
~0.5	54	39	15	27
~1	69	47	22	31
~1.5	36	20	16	44
~2.0	32	20	12	37
~2.5	19	10	9	47.3
~3.0	13	10	3	23
~4.0	12	4	8	66
~5.0	2	1	1	50
5.0	5	2	3	60
Unknown	8	6	2	-
Total	250	159	91	36.4

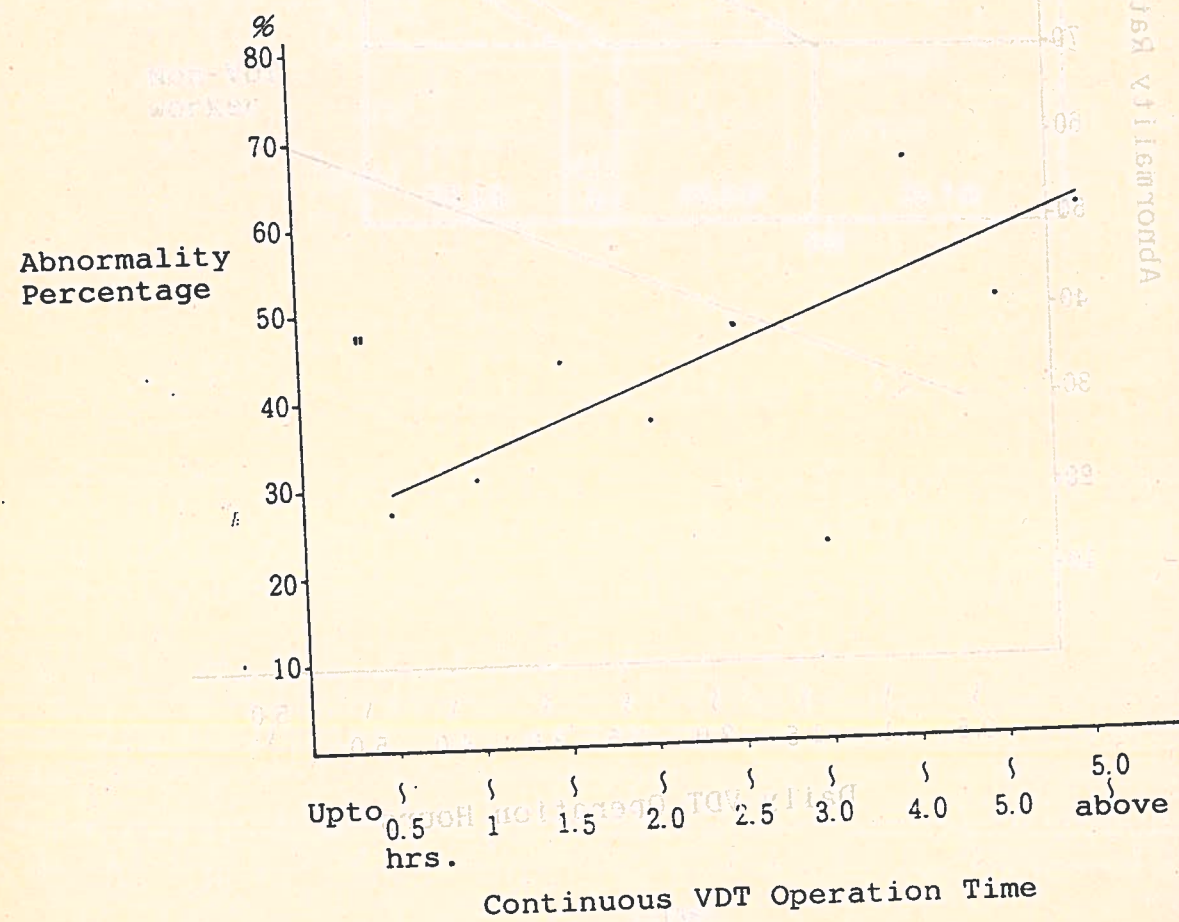


Chart No. 5-8

Abnormality Rate of Pregnancy/Parturition By Screen Watching Time Rate

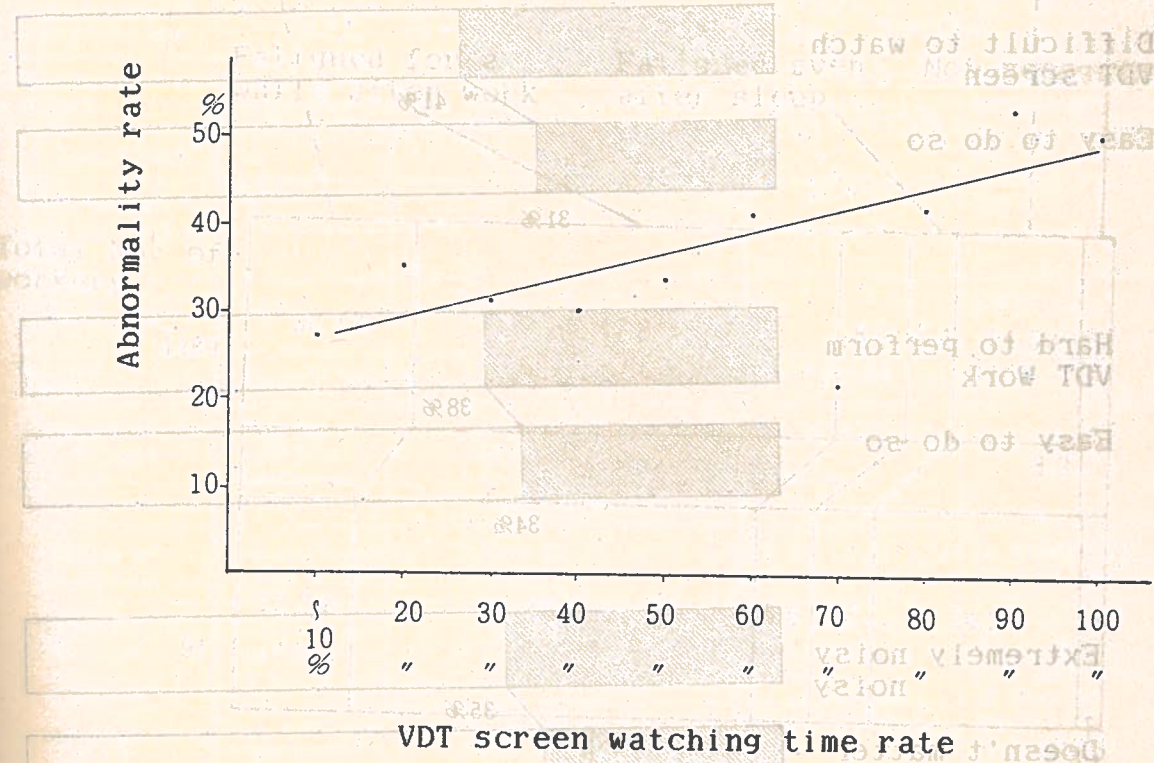


Chart No. 5-9

Abnormality Rate of Pregnancy/Parturition and Working Environment

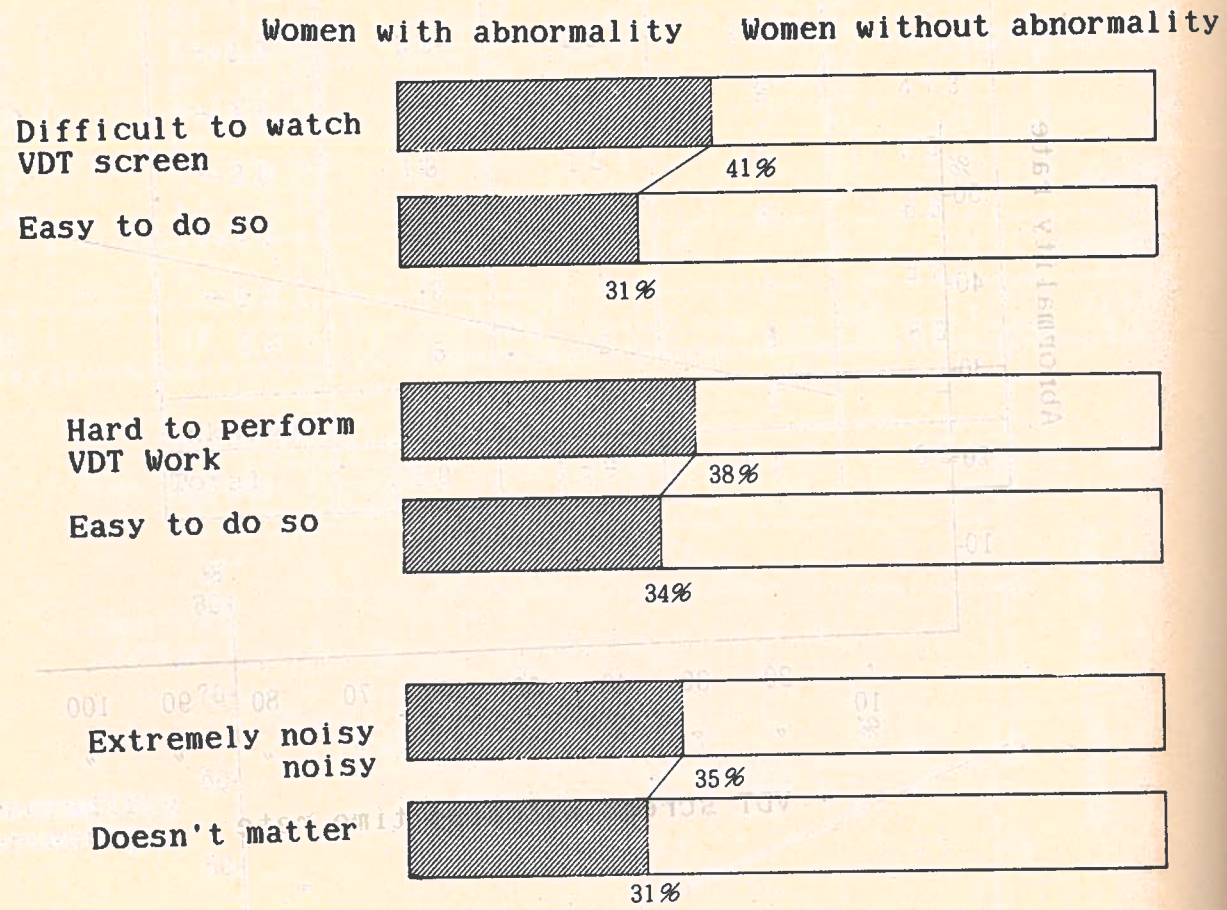


Chart No. 5-10

Comparison of Fatigue

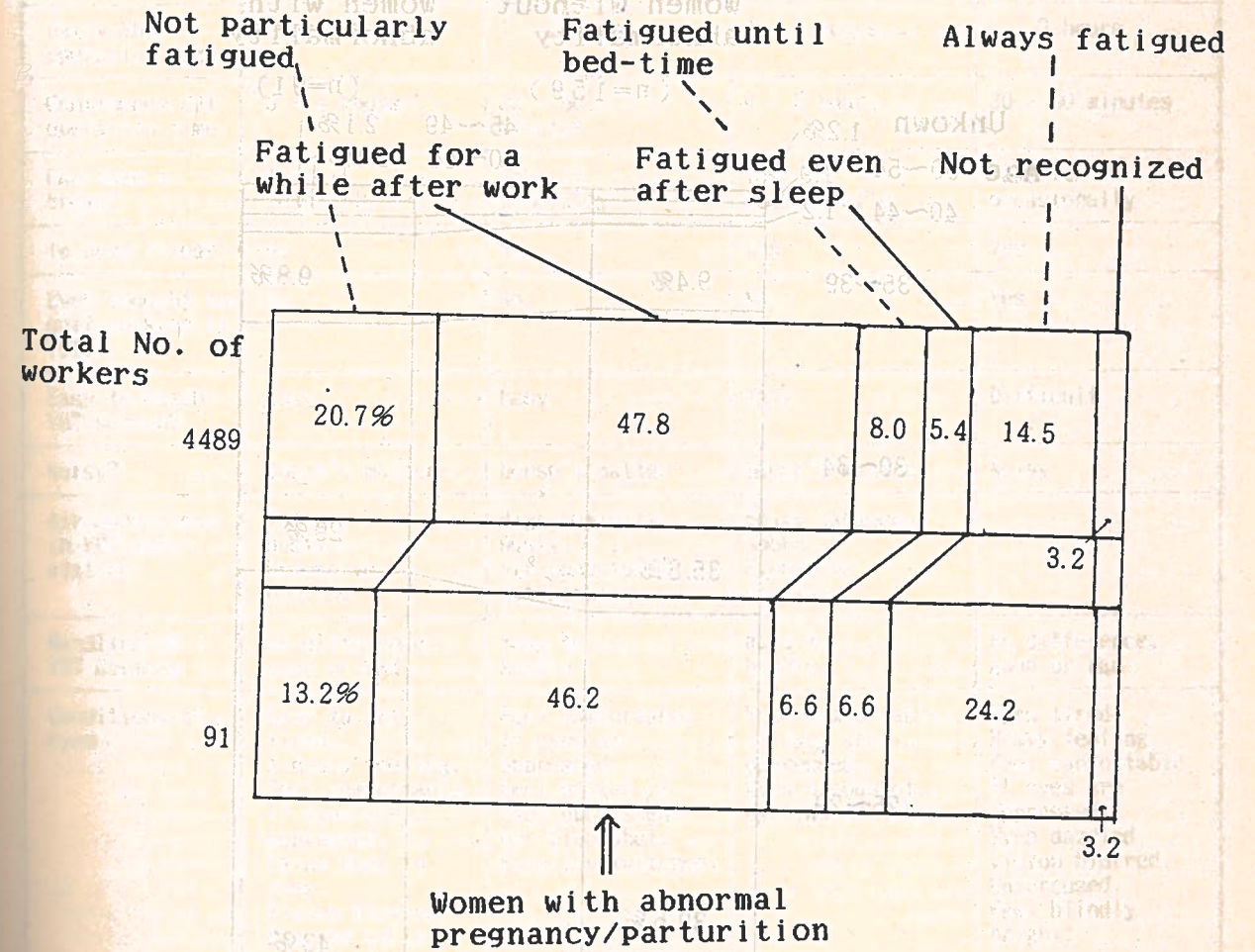
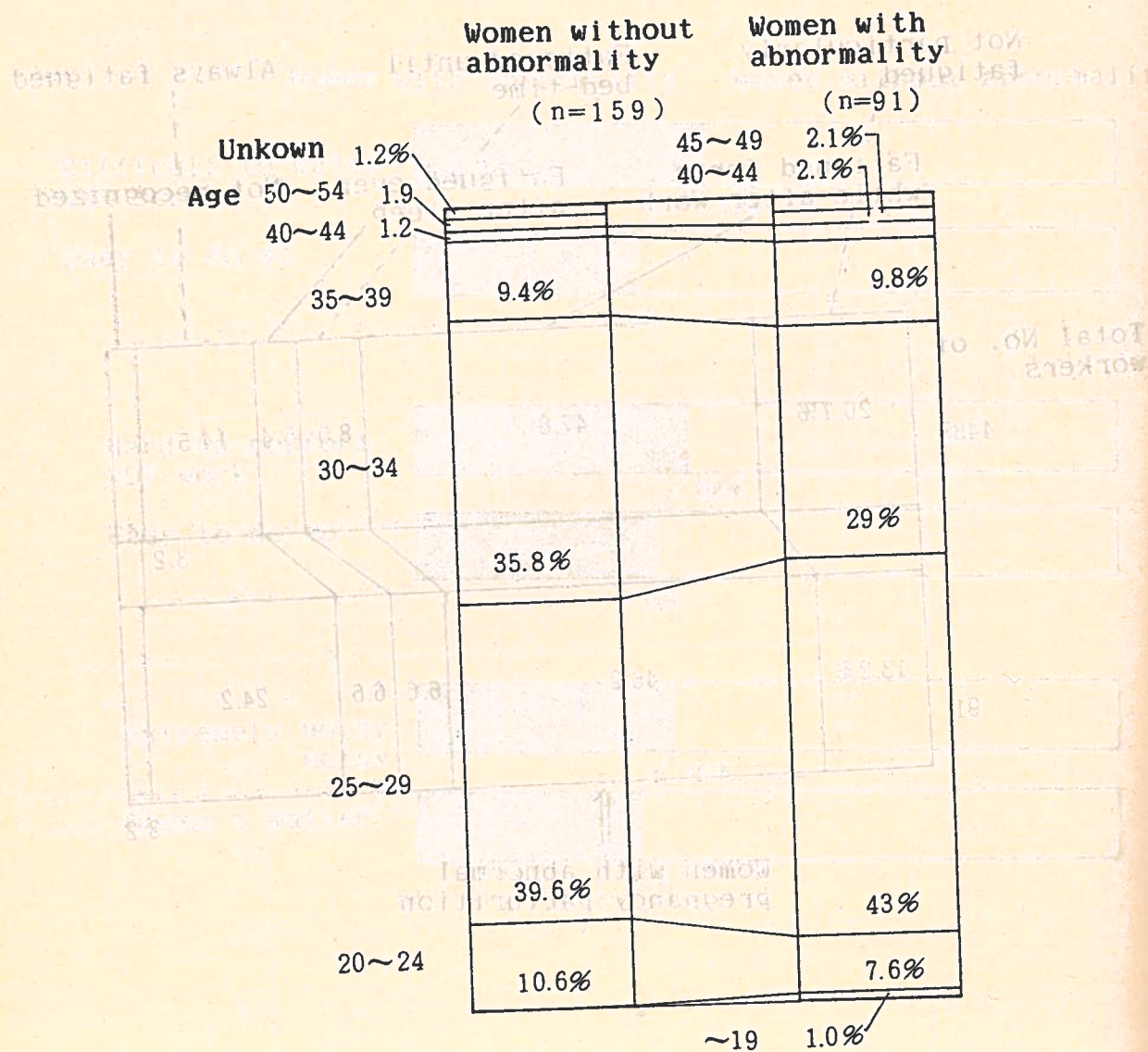


Chart No. 5-11

Age Group for Pregnancy/Parturition



Relations Between Pregnancy/Parturition & Health of VDT Workers

VDT Worker	A	B	C	D
Age Group (Years)	30 - 34	40 - 44	30 - 40	25 - 29
Employment Status	Permanent	Permanent	Permanent	Permanent
Employment Form	Shift work	Day shift	Day shift	Day shift
Type of task	Dialogue	Data entry	Data entry	Data entry
Daily VDT operation time	Over 6 hours	1 - 2 hours	4 - 5 hours	1 - 2 hours
Continuous VDT operation time	3 - 4 hours	30 - 60 minutes	4 - 5 hours	30 - 60 minutes
Can take a break?	Take it generally	Take it generally	Take it occasionally	Take it occasionally
Is norm fixed?	No	No	Yes	Yes
Ever thought to quit working at VDT?	No	No	No	Yes
Easy to watch VDT screen?	Easy	Easy	Easy	Difficult
Noisy?	Doesn't matter	Doesn't matter	Doesn't matter	Noisy
Air conditions in VDT work-station	Too dry Dusty Excessive cooling	High humidity Dusty Air-conditions not working	Heavy tobacco smoke Excessive cooling	
Handling of VDT devices	No difference, good or bad	Easy to handle	Hard to handle	No difference, good or bad
Conditions of eyes	Easy to get tired. A heavy feeling. Feel comfortable if eyes are oppressed. Pains deep in eyes. Vision blurred. Blurred while gazing at anything. Eyelids twitched.	Feel comfortable if eyes are oppressed. Feel better if eyes are oppressed. Eye bloodshot. Eyelids twitched.	Feel comfortable if eyes are oppressed. Eyes bloodshot. Eyelids twitched.	Eyes tired. Heavy feeling. Feel comfortable if eyes are oppressed. Eyes dazzled. Vision blurred. Unfocused. Feel blindly bright. Fuzzy
Health conditions: pains, stiffness, languor	Neck (R) Shoulder (R) Arm (R) Fingers (R) Fingers (L) Waist	Fingers (R) Back pains	Shoulder (L)	Neck (R&L) Shoulder (R&L) Arm (R) Back

Relations Between Pregnancy/Parturition & Health of VDT Workers

VDT Worker	E	F	G	H
Age Group (Years)	30 - 34	30 - 34	25 - 29	30 - 34
Employment Status	Permanent	Permanent	Permanent	Permanent
Employment Form	Day shift	Day shift	Day shift	Shift work
Type of task	Data retrieval	Data entry	Data entry	Data entry
Daily VDT operation time	Less than 1 hour	3 - 4 hours	3 - 4 hours	4 - 5 hours
Continuous VDT operation time	Less than 30 minutes	1.5 - 2 hours	3 - 4 hours	1 - 1.5 hours
Can take a break?	Can't take it	Can't take it	Take it generally	Take it generally
Is norm fixed?	No	Yes	Yes	No
Ever thought to quit working at VDT?	Yes	Yes	Yes	No
Easy to watch VDT screen?	Difficult	Difficult	Difficult	Difficult
Noisy?	Very noisy	Very noisy	Noisy	Noisy
Air conditions in VDT workstation	Ill smelling	Too dry; High humidity; ill smelling; Tobacco smoke Excessive cooling	Dusty Air-condition is bad	Extremely strong cooling and heating
Handling of VDT devices	No difference, good or bad	Hard to handle	No difference, good or bad	No difference, good or bad
Conditions of eyes	Eyes tired; Feel comfortable if eyes are oppressed Blurred while gazing at anything Phantom appears in eyes; Light runs when eyes are closed	All symptoms are experienced but for "Feel eyes are oppressed and colors of things seem to be different"	Eyes tired Comfortable if eyes are oppressed Unfocused Eyes are gummed up	Eyes tired Heavy feeling Feel comfortable if eyes are oppressed Vision blurred Unfocused Blurred while gazing at anything Eyes bloodshot Colors of things seem to be different
Health conditions: pains, stiffness, languor	Neck (R&L) Shoulders (R&L)	All kinds of symptoms	Shoulder (R) Arm (R) Back Waist	Neck (R&L) Shoulder (R&L) Fingers (R&L) Back Waist Leg (R&L)

Relations Between Pregnancy/Parturition & Health of VDT Workers

VDT Worker	I	J	K	L
Age Group (Years)	30 - 34	30 - 34	Unknown	Unknown
Employment Status	Permanent	Permanent	Unknown	Permanent
Employment Form	Shift work	Day shift	Unknown	Unknown
Type of task	Data entry	Unknown	Data entry	Data retrieval
Daily VDT operation time	Over 6 hours	Less than 1 hour	2 - 3 hours	Over 6 hours
Continuous VDT operation time	1 - 1.5 hours	Less than 30 minutes	1 - 1.5 hours	Over 5 hours
Can take a break?	Take it generally	Take it generally	Take it generally	Take it generally
Is norm fixed?	No	No	No	No
Ever thought to quit working at VDT?	No	No	Yes	No
Easy to watch VDT screen?	Easy	Difficult	Easy	Difficult
Noisy?	Doesn't matter	Very noisy	Unknown	Doesn't matter
Air conditions in VDT workstation	Too dry Extremely strong cooling	Too dry; Dusty ill smelling Extremely strong tobacco smoke	Ineffective cooling	Dusty Ineffective cooling
Handling of VDT devices	Easy to handle	No difference, good or bad	No difference, good or bad	No difference, good or bad
Conditions of eyes	All kinds of symptoms appearing	Eyes tired; Heavy feeling in eyes; Comfortable if eye is oppressed; Unfocused; Eyelids twitched; Light runs if eyes are closed; Colors remains in vision even if eyes are closed.	Pains deep in eyes Feel blindly bright Eyelids twitched	Eyes tired; Heavy feeling in eyes; Feel eyes oppressed; Comfortable feeling if eyes are pressed; Pains deep in eyes Eyes dazzled; Vision blurred; Feel blindly bright; Unfocused; Fuzzy
Health conditions: pains, stiffness, languor	Neck (R&L) Shoulder (R&L) Arm (L) Waist	Neck (R&L) Shoulder (R&L) Arm (R) Fingers (L) Leg (R)	Shoulder (R) Arm (R) Waist	All kinds of Symptoms but for one in "Fingers (R)"

Relations Between Pregnancy/Parturition & Health of VDT Workers

VDT Worker	M	N
Age Group (Years)	25 - 29	30 - 34
Employment Status	Permanent	Permanent
Employment Form	Day shift	Day shift
Type of task	Data retrieval	Data entry
Daily VDT operation time	Less than 1 hour	5 - 6 hours
Continuous VDT operation time	30 - 60 minutes	30 - 60 minutes
Can take a break?	Take it generally	Take it generally
Is norm fixed?	No	No
Ever thought to quit working at VDT?	No	Yes
Easy to watch VDT screen?	Difficult	Difficult
Noisy?	Noisy	Doesn't matter
Air conditions in VDT workstation		Too dry
Handling of VDT devices	Easy to handle	Difficult to handle
Conditions of eyes	All kinds of symptoms appearing but for "Colors of things seem to be different"	Eyes tired; Heavy feeling in eyes; Comfortable if eye is oppressed; Pains deep in eyes; Feel blindly bright; Vision blurred; Flickering; Eyelids twitched
Health conditions: pains, stiffness, languor	All kinds of symptoms but for one in "Legs"	All kinds of symptoms but for one in "Fingers (L)"

VDT worker	A	B	C	D
General health conditions:	Feel heavy in head; have no energy; absent-minded; eyes tired; can't concentrate ideas; fretful/irritated; forgetful; pains in back; feel dizzy; Hearing hardness	General lanuor; Eyes tired; Want to lie down; Ringing in ears	Eyes tired; Stiffness in shoulders; Constipated often	Feeling heavy in head; absolutely no energy; Absent-minded; Eyes tired; Can't concentrate iedeas; make mistakes very often; Headache; Pains in back; Stiffness in shoulders
Irregular menstruation?	Irregular	Not irregular	Not irregular	Irregular
Abnormal parturition	Caesarean operation	Miscarriaged	No failure	Profuse beeding
Any cramps during the period?	Cramps	No cramps	Cramps	Other troubles
Menstruation leave taken?	Generally taken every period	Occasionally taken	N/A	Taken often
Abnormal pregnancy	Near miscarriage	Near miscarriage	No failures	Other symptoms
Working and living conditions	Job intensified Workload increased No latitude Pushed by schedules Can't take paid leave freely Jobs complicated /sophisticated Heavier responsibilities Workshop human relations worsened	Jobs intensified	-	-
Improvements desired on the jobs	1 Human relations 2 Better conditions to permit workers to take sick leave 3 Reduction of VDT operation time	1 Comfortable rest-room for worker's lying down 2 Air-conditioning and air cleanliness 3 More recess time	1 Air and temperature 2 Human relations 3 Better conditions to permit workers to take sick leave	1 Air and temperature 2 More recess time 3 Reduction of noise
Remarks	Maximum continuous VDT operation time is 5 hours a day Engaged in VDT work for 6 years 1 month	Maximum continuous VDT operation time is one hour a day A VDT corner set up within the same floor-space for other general work VDT screen watching time - 80% of the job	Maximum continuous VDT operation time is 3 hours Experienced in VDT work for 3 years A VDT corner set up in the existing room VDT screen watch-time - 80% of job	3 years 1 year 9 months special VDT work station room 50 %

VDT worker	E	F	G	H
General health conditions:	Feel heavy in head; Impatient; no energy; Headache; absent minded; feel like vomiting; eyes tired; stiffness in shoulders; wish to lie down; Heart palpitation & out of breath; Can't concentrate ideas; Feel wringing head	All kinds of symptoms but for ears ringing	Feel heavy in head; Want to lie down; forgetful; Stiffness in shoulders; Pains in back; Sudden palpitation of heart; Ringing in ears	All kinds of symptoms at large
Irregular menstruation?	Not irregular	Not irregular	Not irregular	Irregular
Any cramps during the period?	Cramps	Cramps	Cramps	Cramps
Menstruation leave taken?	Taken often	Can't take it	Can't take it	Taken often
Abnormal pregnancy	Toxemia of pregnancy, Near miscarriage	Near miscarriage	Near miscarriage	Toxemia of pregnancy
Abnormal parturition	Profuse bleeding	Caesarean operation	No failure	Still birth
Working and living conditions	Job intensified Workload increased No latitude Pushed by schedules; Can't take paid leave freely Not qualified for the present job Can't catch up with technological innovation	All dissatisfactory conditions apply to me, but for "monotony of jobs"	Pushed by schedules; Jobs complicated/sophisticated; Heavier responsibilities; Controlled by machines Shadowed by apprehension of jobs	Jobs intensified Can't sleep well at home Can't keep regular living behavior
Improvements desired on the jobs	1 Rest-room for workers to lie down 2 Reduction of noise 3 Reduction in workload	1 Human relations 2 Wish to transfer to other workplace 3 Reduction in VDT operation time	1 Rest-room for workers to lie down 2 More recess time 3 Need for persons to consult with	1 Not imposed jobs on women 2 Human relations 3 Reduction of noise
Remarks	Maximum continuous VDT operation time is 3 hours a day; Engaged in VDT work for 1 year 6 months; A VDT corner set up in the ordinal room; VDT screen watching time -30%	8 hours	7 hours 1 year 2 months	2 hours 5 years VDT corner in ordinal room 50%

VDT worker	I	J	K	L
General health conditions:	All kinds of symptoms at large	All kinds of symptoms at large	Eyes tired Irritated Stiffness in shoulders Pains in the back	All kinds of symptoms at large
Irregular menstruation?	Not irregular	Irregular	Irregular	Irregular
Abnormal parturition	Miscarriage	1) Miscarriage 2) Premature birth	Profuse bleeding Caesarean ope.	Caesarean operation/Still birth
Any cramps during the period?	Cramps	Cramps	Unknown	Cramps
Menstruation leave taken?	Unknown	Generally taken, every period	Unknown	Generally taken, every period
Abnormal pregnancy	Near miscarriage	Near miscarriage	No failures	Toxemia of pregnancy
Working and living conditions	Workload increased Always pushed by work schedules Jobs became monotonous Feel like controlled by machines	Afraid of not catching up with technological innovation Always pushed by work schedules	Jobs became monotonous heavier responsibilities No mistake permitted	
Improvements desired on the jobs	1 Reduction of working time 2 Increase of recess time 3 Rest-room for workers to lie down	1 Air and temperature in workstation 2 Better lighting 3 Reduction of noise	1 Air and temperature 2 Reduction of noises 3 Wish to be transferred to other workstation	1 Rest-room for workers to lie down 2 Air and temperature 3 Human relations
Remarks	Maximum continuous VDT operation time is 2 hours a day; Engaged in VDT work for 7 years 3 months; A VDT set up in special VDT workstation; VDT screen watching time - 80%/job	5 hours 3 year 3 months in ordinal room 90% of the job	5 hours 1 year 7 months in ordinal room 80%	7 hours 1 year 3 months in ordinal room 80%

VDT worker	M	N
General health conditons:	All kinds of symptoms at large	All kinds of symptoms at large
Irregular menstruation?	Not irregular	Irregualr
Abnormal parturition	Still birth	Premature birth
Any cramps during the period?	No cramps	Cramps
Menstruation leave taken?	Generally taken, every period	Generally taken, every period
Abnormal pregnancy	No failure	Near miscarriage
Working and living conditions	Jobs complicated/sophisticated	No latitude on the job; Always pushed by work schedules; Human relations worsened Always shadows by fears of jobs; Afraid of being disqualified for the percent jobs
Improvements desired on the jobs	1 Rest-room for workers to lie down 2 Eliminate labor administration to encourage competition 3 Working procedures & methods	1 Working procedures & methods 2 Better lighting 3 Human relations
Remarks	Maximum continuous VDT operation time is 5 hours a day; Engaged in VDT work for 6 years; A VDT set up in the ordinal room; VDT screen watching time - 70 % of the job	1 hour 10 years VDT work on the ordinary office work desk 10 %

CHAPTER VI - What Are Affecting Workers At Home And Workstations
(Desires From VDT Workers)

1. Compared with the non-VDT workers, the VDT workers are more beset by strict working hours, mechanical restraints imposed on labor and severe deterioration of working environment, all brought about through introduction of the VDT work without rearrangement of the working environment including employment conditions to meet requirements of the VDT work.
2. Between the men and women, there are differences in their patterns of thinking and concept towards their daily working and living conditions and also in the problems they want to solve on the job. At large the men are committed to settlement of the jobs and mechanism on one hand, but on the other the women are much concerned with hazards to their health and discontented with the working environment.
3. By type of task, according to the pattern analysis based on categories as set up in Question Nos. 48 and 49, it is discovered that (1) the tasks of data entry and data retrieval are similar in respect to their job requirements; (2) the similar pattern can be found in the tasks of dialogue and designing/drawing (CAD); because, judgement of the on-going tasks by the individual workers keeps a major share in the overall work contents; (3) the pattern of word processing resembles that of the non-VDT work, and the working conditions for word processing seem to have been worsened all the more simply due to its addition to the previous work; and (4) the task of monitoring, different from other ones, covers work contents requiring strong mechanical restraints; and thus, in view of the pattern analysis, it might be concluded moderately that the essential pattern of ocomputer-aided labor is composed of inputs and outputs, or data entry and data retrieval.

CHAPTER VI - What Are Affecting Workers At Home And Workplaces
 4. By age, it can be said that the middle aged and elderly workers apprehend danger in the technological innovation to the extent that they could not catch up with it. But this danger is alleviated simply by their engagement in the VDT work in fact. Also, the age group of 30s has a fear of the computer-aided technological advancement.

On the other hand, for women workers, there are peaks of complaints raised from the age groups of 19 - 20 and 44 - 49 over the working environment including air-conditioning, temperature control and rest-time accommodations. Since the ages of 44 - 49 fall on the turn of life, or a menopause time for women, this is another point to be noted in this survey.

At large the men are committed to solving the problems they want to solve on the job. At large the men are committed to solving the problems they want to solve on the job. At large the men are committed to solving the problems they want to solve on the job.

By type of task, according to the pattern analysis based on categories set up in Question Nos. 48 and 49, it is discovered that (1) the tasks of data entry and data retrieval are similar in respect to their job requirements. (2) similar pattern can be found in the tasks of dialogue and designing/drawing (CAD). (3) tasks of management of the design tasks by the individual workers have a major share in the overall work contents. (4) the pattern of work processing resembles that of the non-VDT work and the working conditions for word processing seem to have been worsened off the more simply due to the addition of the design tasks. (5) the task of designing/drawing (CAD) is a major task in the overall work contents. (6) the pattern of work processing resembles that of the non-VDT work and the working conditions for word processing seem to have been worsened off the more simply due to the addition of the design tasks. (7) the task of designing/drawing (CAD) is a major task in the overall work contents.

Table 6-1

Table 6-1 (Cont'd.)

Current Problems Affecting VDT Workers' Working and Living Conditions (By Order of Priority)

Male (n=7,368)	Priority	Female (n=4,489)
Increase workload	1	Increase workload
Longer hours restricted by jobs	2	Always feel driven by working schedules
Jobs complicated/sophisticated	3	Can't perform jobs with latitude
Always feel driven by working schedules	4	Longer hours restricted by jobs
Can't perform jobs with latitude	5	Jobs intensified
Jobs intensified	6	Can't take paid leave freely
Mistakes no more permitted	7	Controlled by mechanically integrated systems
Can't take paid leave freely	8	Mistakes no more permitted
Heavier responsibilities	9	Jobs complicated/sophisticated
Controlled by mechanically integrated systems	10	Heavier responsibilities
Less leisure time	11	Apprehension of workers being disqualifed for VDT jobs
Less comfortable time for enjoyment with family members/friends	12	Can't enjoy recess time during recess periods
Can't enjoy recess time during recess periods	13	Less comfortable time for enjoyment with family members/friends
Can't enjoy daily life normally	14	Apprehension of workers being shadowed by jobs always

Table 6-1 (Cont'd.)

Current Problems Affecting VDT Workers' Working and Living Conditions (By Order of Priority)

Male (n=7,368)	Priority	Female (n=4,489)
Apprehension of workers being shadowed by jobs always	15	Jobs becoming monotonous
Apprehension of workers being disqualified for VDT jobs	16	Less leisure time
Apprehension of workers not catching up with technological innovation	17	Can't enjoy daily life normally
Can't enjoy enough sleeping time at home	18	Can't enjoy enough sleeping time at home
Norm intensified	19	Human relations at workshop worsened
Jobs becoming monotonous	20	Overtime work increased due to introduction of VDT devices
Overtime work increased due to introduction of VDT devices	21	Norm intensified
Human relations at workshop worsened	22	Apprehension of workers not catching up with technological innovation
Family responsibilities increased	23	Job preparation and discussions not smoothed well
Can't have enough sleeping (doze) time as permitted	24	Family responsibilities increase
Job preparation of workers not catching up with technological innovation	25	Can't have enough sleeping (doze) time as permitted

Table No. 6-2

Recent Problems Bothering VDT Workers' Working and Living Life (By VDT Task)

Problems	Male	Female	VDT tasks		
			(1)	(2)	(3)
Working hours					
Longer hours controlled by tasks:	1,936	919	1,321	721	372
Always driven by tasks:	1,892	1,297	1,685	631	436
Can't take paid leave freely:	1,271	715	987	430	301
Sub-total	5,099 (28%)	2,931 (28%)	3,993 (29%)	1,782 (28%)	1,109 (29%)
Working & intensity					
Increased workload:	1,139	1,519	2,067	885	569
Less work allowing latitude:	1,754	1,019	1,382	645	373
Intensified work:	1,710	832	1,240	559	384
Sub-total	6,170 (34%)	3,370 (32%)	4,689 (34%)	2,089 (33%)	1,326 (35%)
Mechanical restraints					
Mistakes no more permitted:	1,335	686	1,027	440	285
Controlled by mechanically integrated systems:	1,230	1,703	1,134	343	248
Heavier responsibilities:	1,258	629	857	466	252
Sub-total	3,823 (21%)	3,018 (28%)	3,013 (22%)	1,249 (20%)	785 (21%)

Note: (1)Data entry, (2)Dialogue, (3)Data retrieval

Table No. 6-2 (Cont'd.)

Recent Problems Bothering VDT Workers' Working and Living Life (By VDT Task)

Problems	Male	Female	VDT tasks		
			(1)	(2)	(3)
Quality of life					
Reduced leisure time:					
Less comfortable time for enjoyment together with family & friends:	1,098	469	687	450	195
Can't keep regular daily life:	1,033	498	683	431	192
	881	378	547	345	160
Sub-total	3,012 (17%)	1,349 (13%)	1,917 (14%)	1,226 (19%)	547 (15%)
Grand total	18,104 (100%)	10,664 (100%)	13,612 (100%)	6,346 (100%)	3,767 (100%)

Note: (1)Data entry, (2)Dialogue, (3)Data retrieval

Table No. 6-2 (Cont'd.)

Recent Problems Bothering VDT Workers' Working and Living Life (By VDT Task)

Problems	VDT tasks			Average	Non-VDT workers
	(4)	(5)	(6)		
Working hours					
Longer hours controlled by tasks:					
Always driven by tasks:	290	87	20		224
Can't take paid leave freey:	306	71	21		247
	149	90	5		199
Sub-total	745 (30%)	248 (25%)	46 (29%)	7,923 (29%)	670 (26%)
Workload&Intensity					
Increased workload:					
Less work allowing latitude:	477	140	26		381
Intensified work:	283	67	16		287
	218	88	10		327
Sub-total	978 (39%)	295 (30%)	52 (33%)	9,429 (34%)	995 (38%)
Mechanical restraints					
Mistakes no more permitted:					
Controlled by mechanically integrated systems:	120	109	9		130
Heavier responsibilities:	92	78	7		117
	159	78	14		127
Sub-total	371 (15%)	285 (29%)	30 (19%)	5,733 (21%)	374 (14%)

Note: (4)Word processing, (5)Monitoring, (6)Designing/ Drawing(CAD)

Table No. 6-2 (Cont'd.)

Recent Problems Bothering VDT Workers' working and Living Life (By VDT Task)

Problems	VDT tasks			Average	Non-VDT workers
	(4)	(5)	(6)		
Quality of life					
Reduced leisure time:					
Less comfortable time for enjoyment together with family & friends:	162	42	10		189
Can't keep regular daily life:	149	40	12		206
	105	70	7		173
Sub-total	416 (17%)	152 (16%)	29 (18.5%)	4,287 (16%)	568 (22%)
Grand total	2,510 (100%)	980 (100%)	157 (100%)	27,372 (100%)	2,607 (100%)

Note: (4)Word processing, (5)Monitoring, (6)Designing/
Drawing(CAD)

Table 6- 3

Improvements Looked For At VDT Workstation

Male (n=7,368)	Priority	Female (n=4,489)
Improvement of air ventilation, temperature of workstation	1	Improvement of air ventilation, temperature of workstation
Reduction in VDT working time	2	Comfortable Rest-Room for workers' lying down
Improvement in working procedures and processes	3	Increase of recess time
Comfortable Rest-Room for workers' lying down	4	Improvement in working procedures and processes
Reduction in workload	5	Better human relations
Increase of recess time	6	Improvement of lighting
Improvement of lighting	7	Reduction in VDT working time
Reduction of noise	8	Reduction of noise
Better human relations	9	Reduction in workload
Transfer to other workstation/jobs	10	Transfer to other workstation/jobs
Correction of labor administration encouraging workers' competition ideas	11	Need for persons to consult with
Need for persons to consult with	12	Better conditions enabling workers to take sick leave
Others	13	Correction of labor administration encouraging workers' competition ideas
Better conditions enabling workers to take sick leave	14	Others
Allow workers to go to toilet freely	15	Allow workers to go to toilet freely

Table No. 6-4

Issues for Improvements on VDT Work
(By Sex, Task and Non-VDT Workers)

Issues for improvements	Male	Female	VDT tasks		
			(1)	(2)	(3)
Recess/Rest hrs.					
Rest-room for workers' lying down:	1,419	1,040	1,285	450	308
Increased recess time:	1,211	883	1,078	371	301
Conditions for sick leave taking:	260	330	313	94	94
Sub-total	2,890 (20%)	2,253 (23%)	2,676 (23%)	915 (19%)	703 (22%)
Working environment					
Improvements in air Ventilation, temperature in VDT workstation:	2,400	2,385	2,400	875	646
Improvements in lighting:	1,145	772	928	380	265
Reduction of noise:	1,121	508	810	361	200
Sub-total	4,666 (33%)	3,665 (39%)	4,138 (35%)	1,616 (34%)	1,111 (35%)
Labor administrations					
Better human relations:	1,018	774	920	323	221
Need to see persons for consultation on grievances:	331	394	365	133	98
Correction of labor administration to encourage competition idea:	395	178	302	114	75
Sub-total	1,744 (12%)	1,350 (14%)	1,587 (13%)	570 (12%)	394 (13%)

Note: (1)Data entry, (2)Dialogue, (3)Data retrieval

Table No. 6-4 (Cont'd.)

Issues for Improvements on VDT Work
(By Sex, Task and Non-VDT Workers)

Issues for improvements	Male	Female	VDT tasks		
			(1)	(2)	(3)
Working methods and hours					
Reduction in working hours:	1,811	747	1,245	576	315
Reduction in workload:	1,412	560	918	494	257
Improvement in working procedures and processing order:	1,766	869	1,233	578	360
Sub-total	4,989 (35%)	2,176 (23%)	3,396 (29%)	1,648 (35%)	932 (30%)
Grand total	14,289 (100%)	9,444 (100%)	11,797 (100%)	4,749 (100%)	3,140 (100%)

Note: (1)Data entry, (2)Dialogue, (3)Data retrieval

Table No. 6-4 (Cont'd.)

Issues for Improvements on VDT Work
(By Sex, Task and Non-VDT Workers)

Issues for improvements	(4)	VDT tasks (5)	(6)	Average	Non-VDT workers
Recess/Rest hrs.					
Rest-room for workers' lying down:	318	56	12		213
Increased recess time:	216	83	12		254
Conditions for sick leave taking:	58	17	3		45
Sub-total	592 (18%)	156 (20%)	27 (20%)	5,069 (21%)	512 (23%)
Working environment					
Improvements in air Ventilation, temperature in VDT workstation:	632	117	26		335
Improvements in lighting:	250	47	13		123
Reduction of noise:	154	80	13		112
Sub-total	1,036 (33%)	244 (32%)	52 (37%)	8,197 (35%)	570 (25%)
Labor administrations					
Better human relations:	217	62	8		177
Need to see persons for consultation on grievances:	93	18	1		44
Correction of labor administration to encourage competition idea:	57	16	1		112
Sub-total	367 (12%)	96 (13%)	10 (7%)	3,024 (13%)	333 (15%)

Note: (4)Word processing, (5)Monitoring, (6)Designing/
Drawing(CAD)

Table No. 6-4 (Cont'd.)

Issues for Improvements on VDT Work
(By Sex, Task and Non-VDT Workers)

Issues for improvements	(4)	VDT tasks (5)	(6)	Average	Non-VDT workers
Working methods and hours					
Reduction in working hours:	264	97	18		475
Reduction in workload:	187	84	16		217
Improvement in working procedures and processing order:	333	88	17		164
Sub-total	1,151 (37%)	269 (35%)	51 (36%)	7,447 (31%)	856 (39%)
Grand total	3,146 (100%)	765 (100%)	140 (100%)	23,737 (100%)	2,271 (100%)

Note: (4)Word processing, (5)Monitoring, (6)Designing/
Drawing(CAD)

Chart No. 6-1

Time, Volume, Intensity, Restriction of VDT Work and Quality of Life/Comparison Between Male and Female

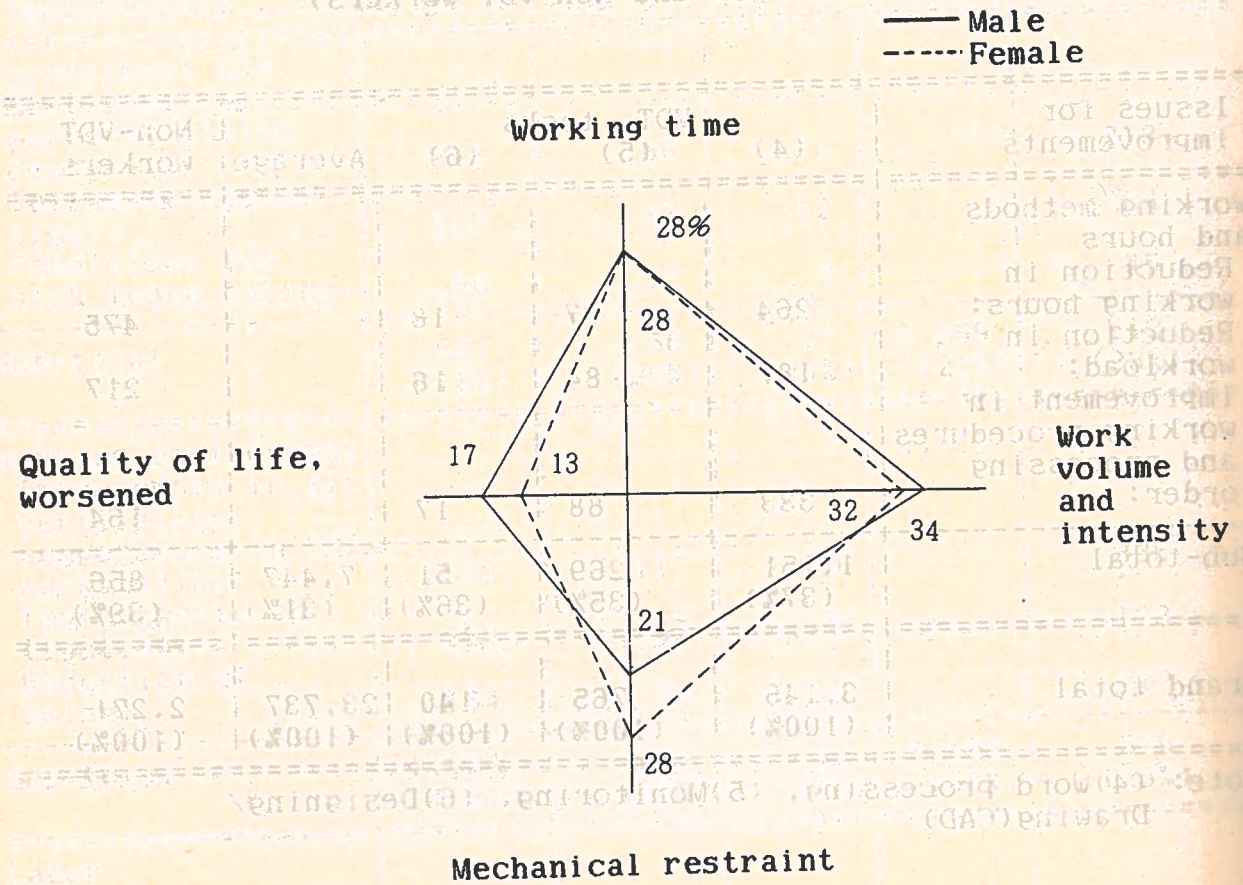
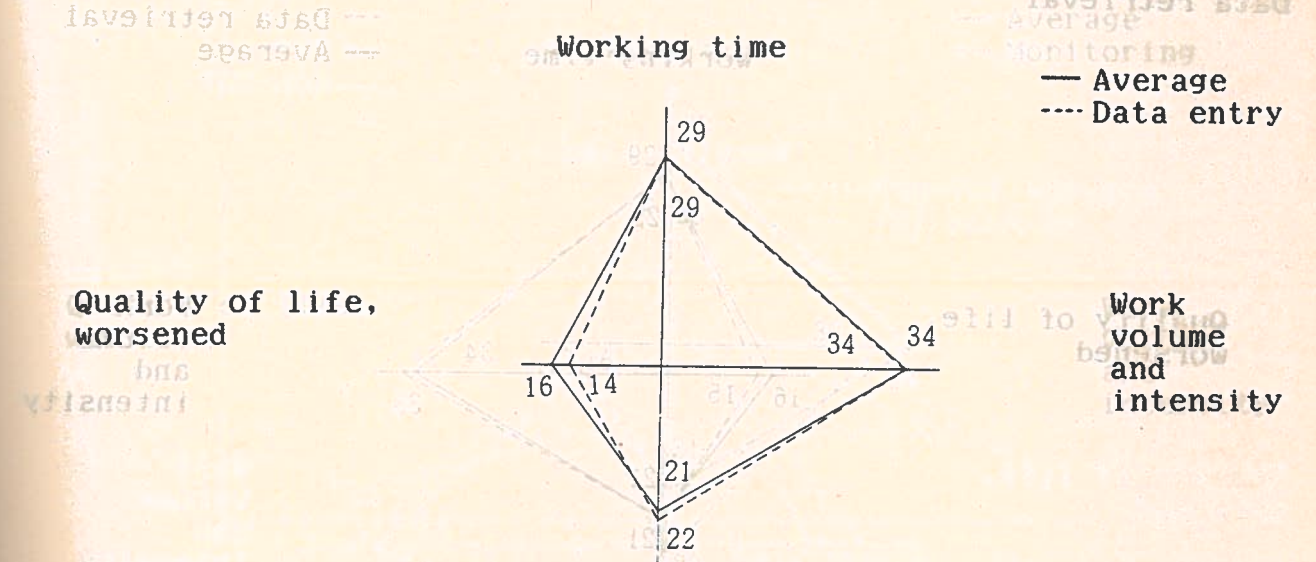


Chart No. 6-2

Time, Volume, Intensity, Restriction of VDT Work and Quality of Life/Comparison By VDT Task

Data entry



Dialogue

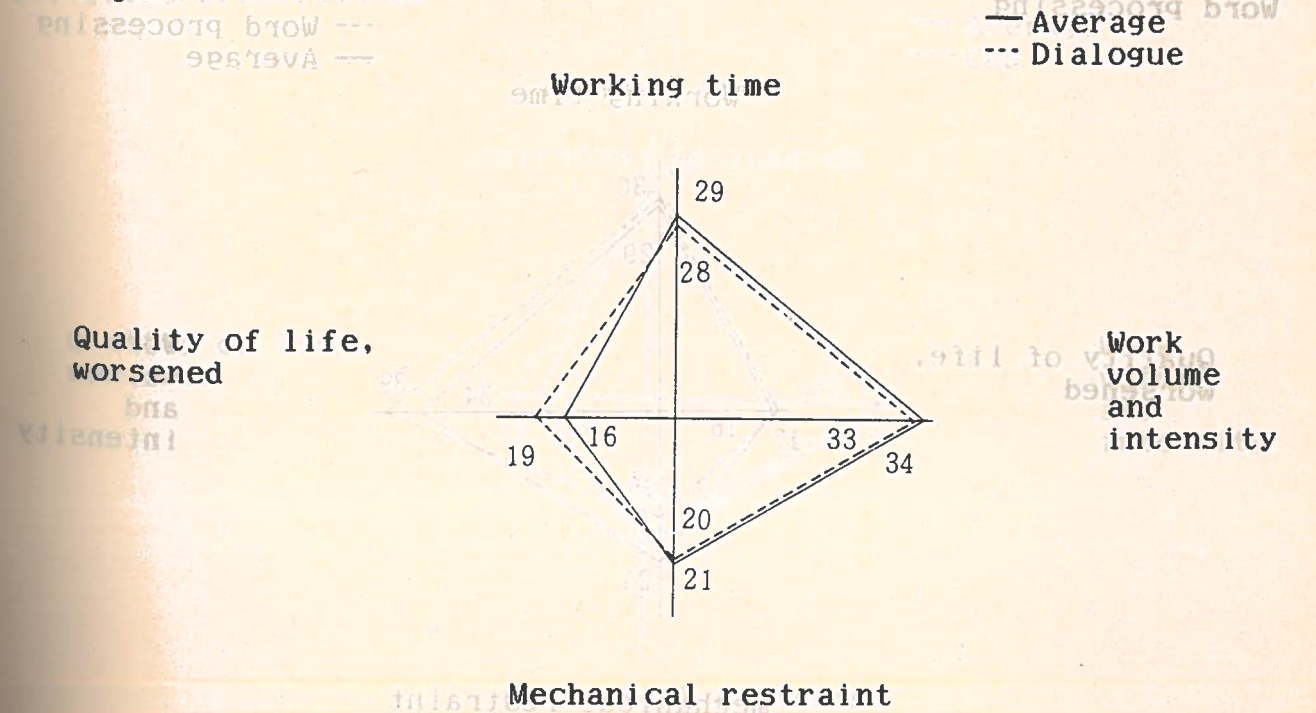
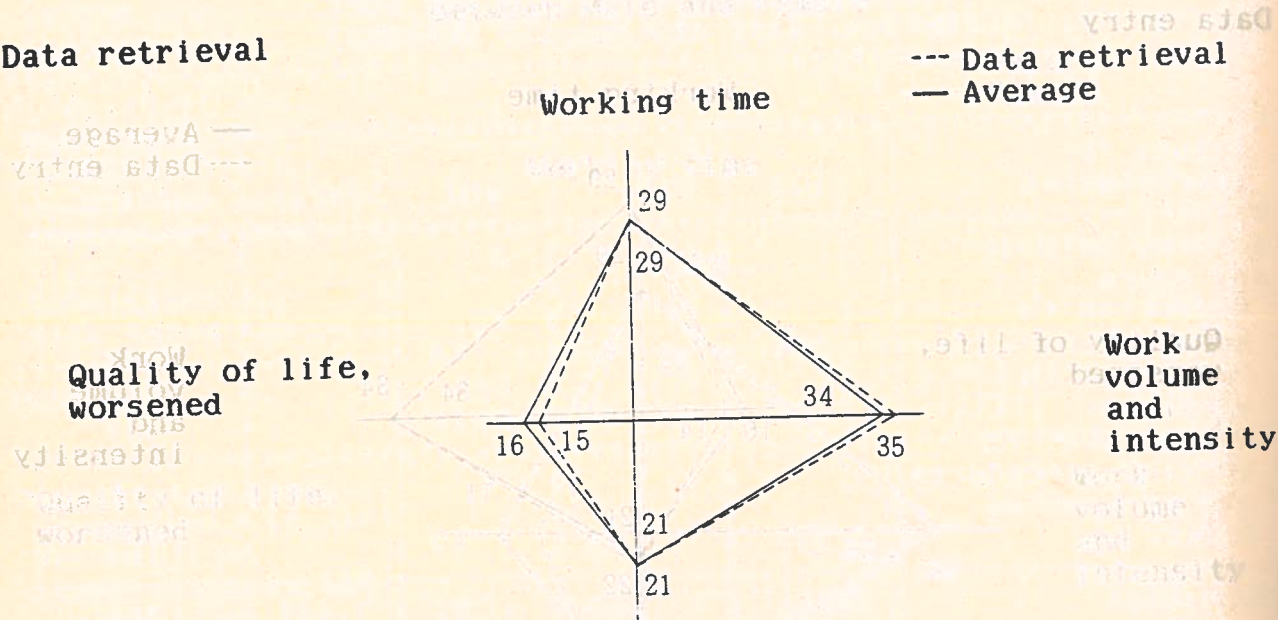


Chart No. 6-2 (Cont'd.)

**Time, Volume, Intensity, Restriction of VDT Work
and Quality of Life/Comparison
By VDT Task**

Data retrieval



Word processing

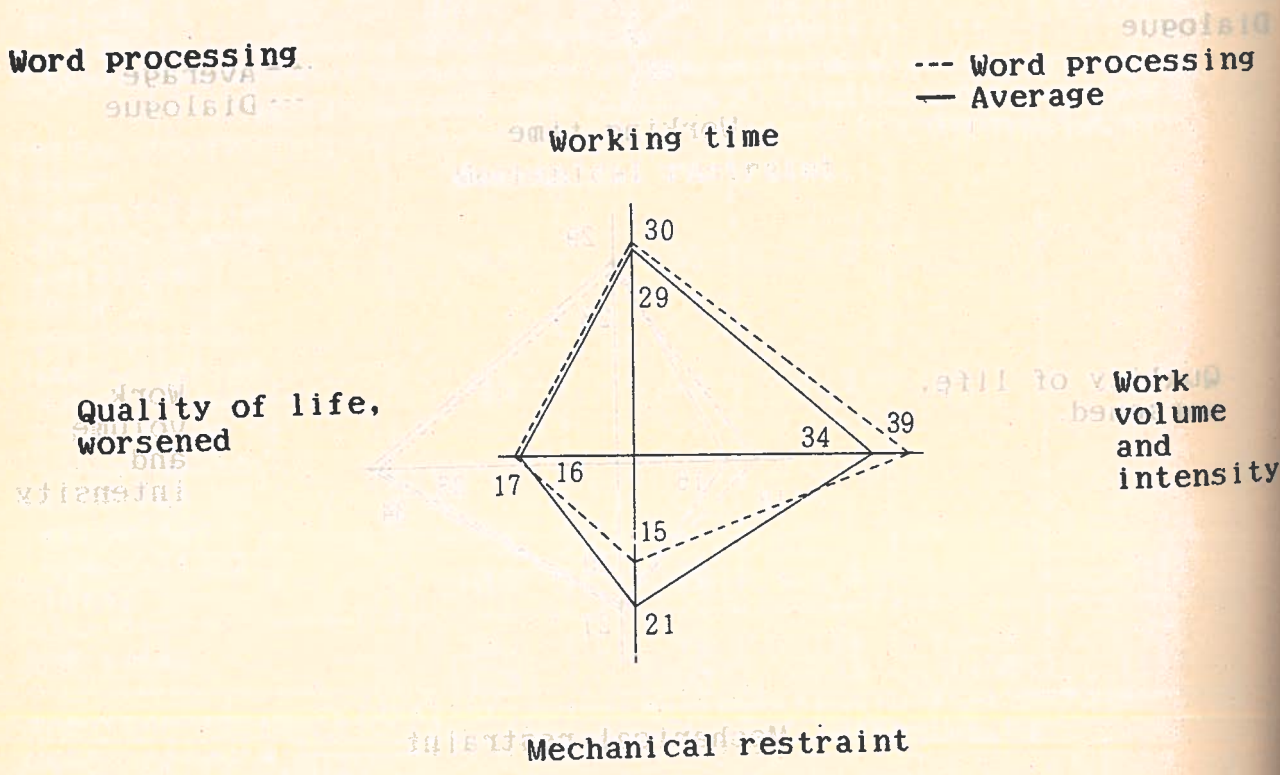
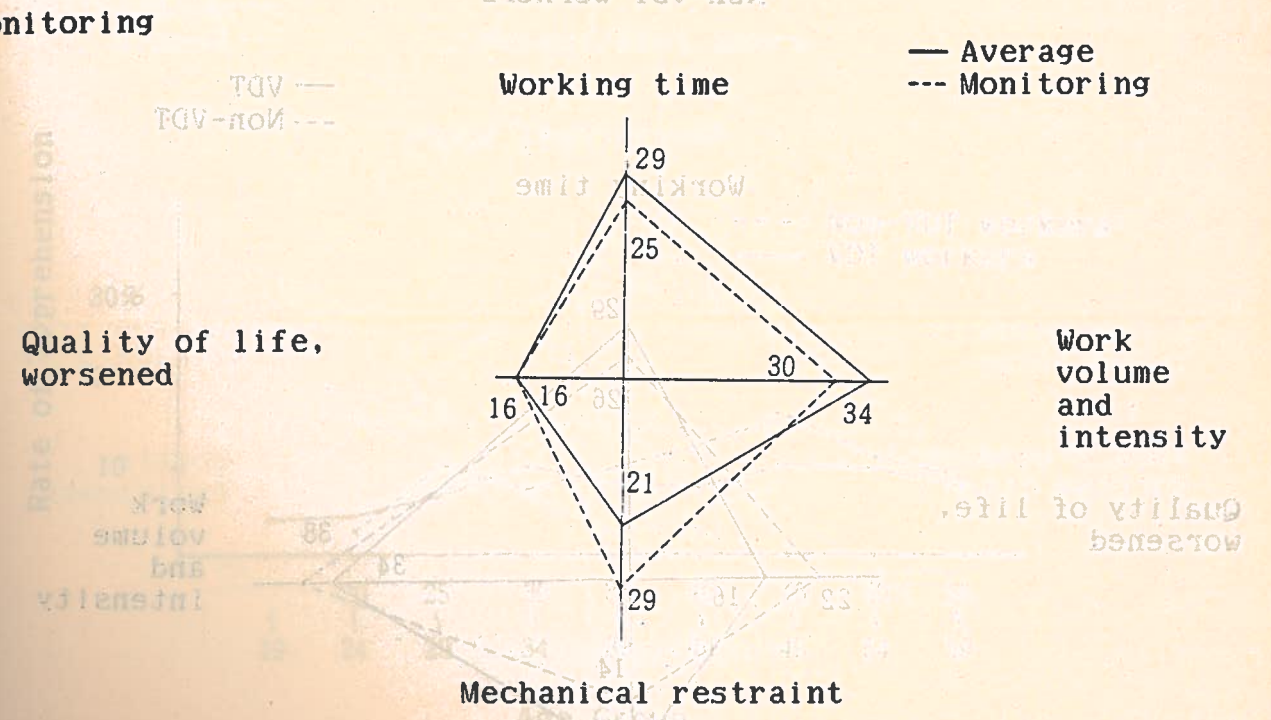


Chart No. 6-2 (Cont'd.)

**Time, Volume, Intensity, Restriction of VDT Work
and Quality of Life/Comparison
By VDT Task**

Monitoring



Designing/Drawing(CAD)

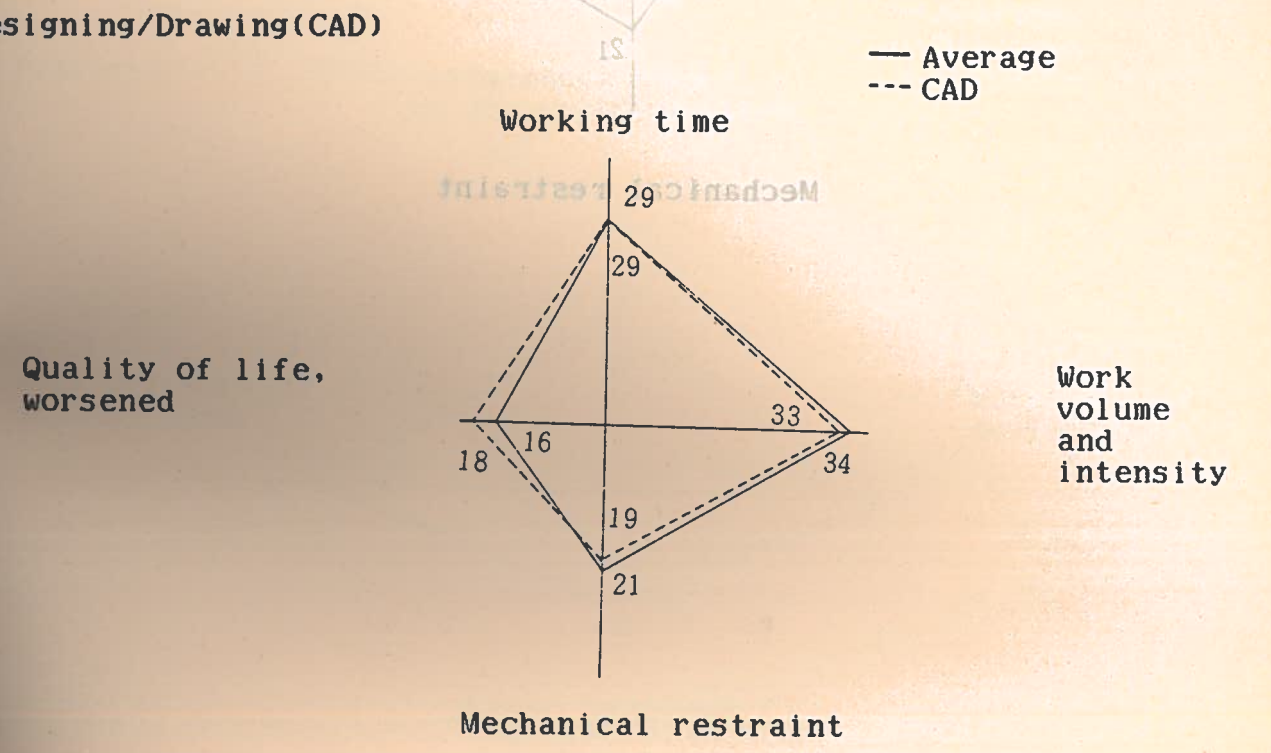


Chart No. 6-3

Time, Volume, Intensity, Mechanical Restraint of VDT Work, and Quality of Life / Comparison Between VDT and Non-VDT Workers

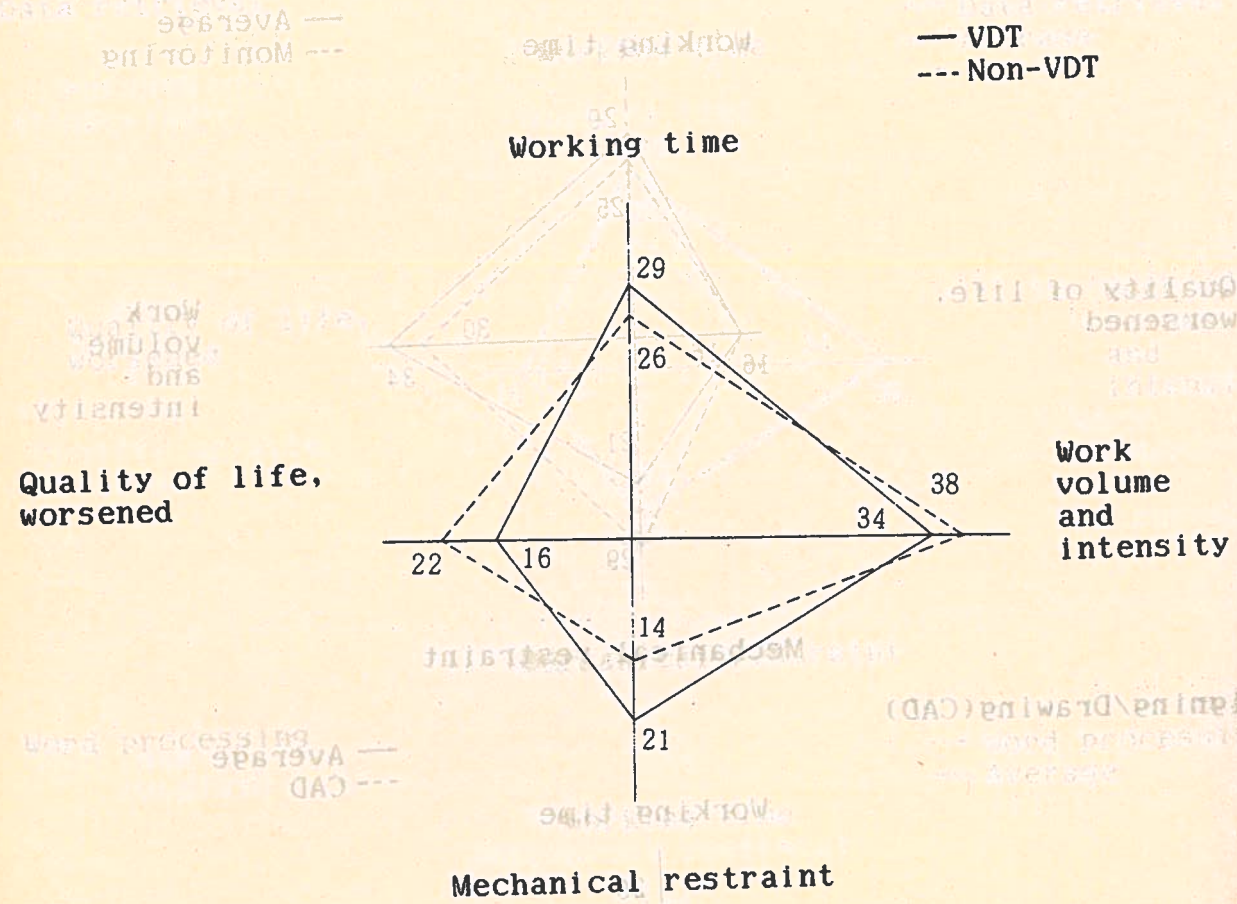


Chart No. 6-4

VDT Workers' Apprehension of "Unable to Catch Up with Technological Innovation" (Comparison Between VDT and Non-VDT Workers)

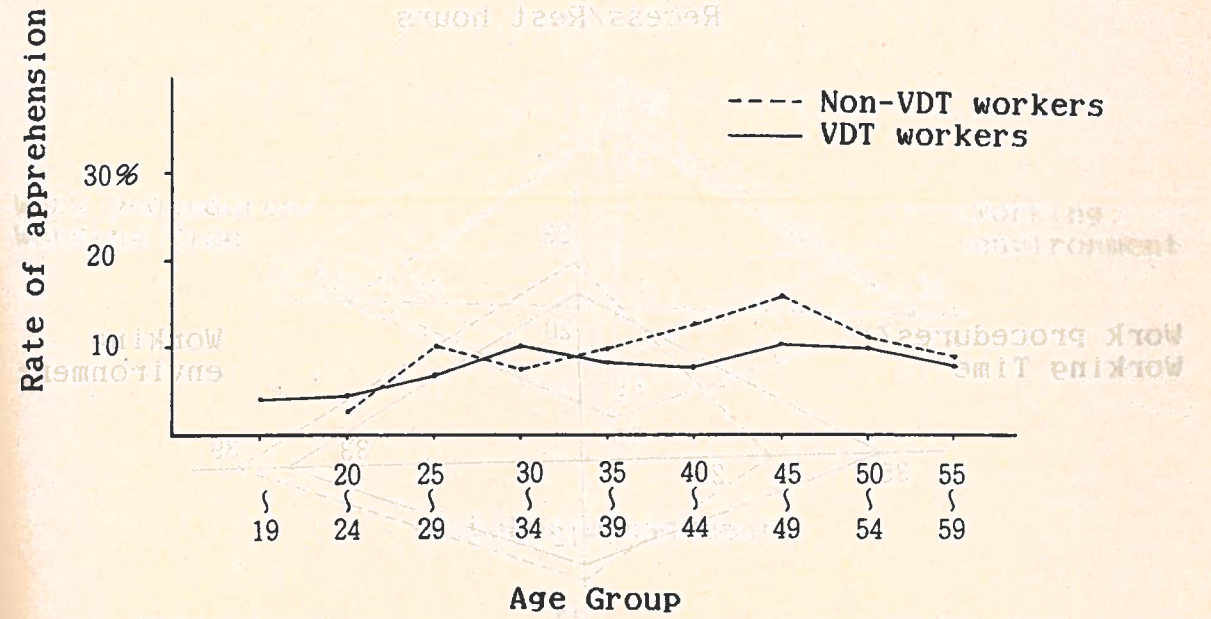


Chart No. 6- 5

Issues for Improvements on VDT Work
(Male and Female Comparison)

— Male
--- Female

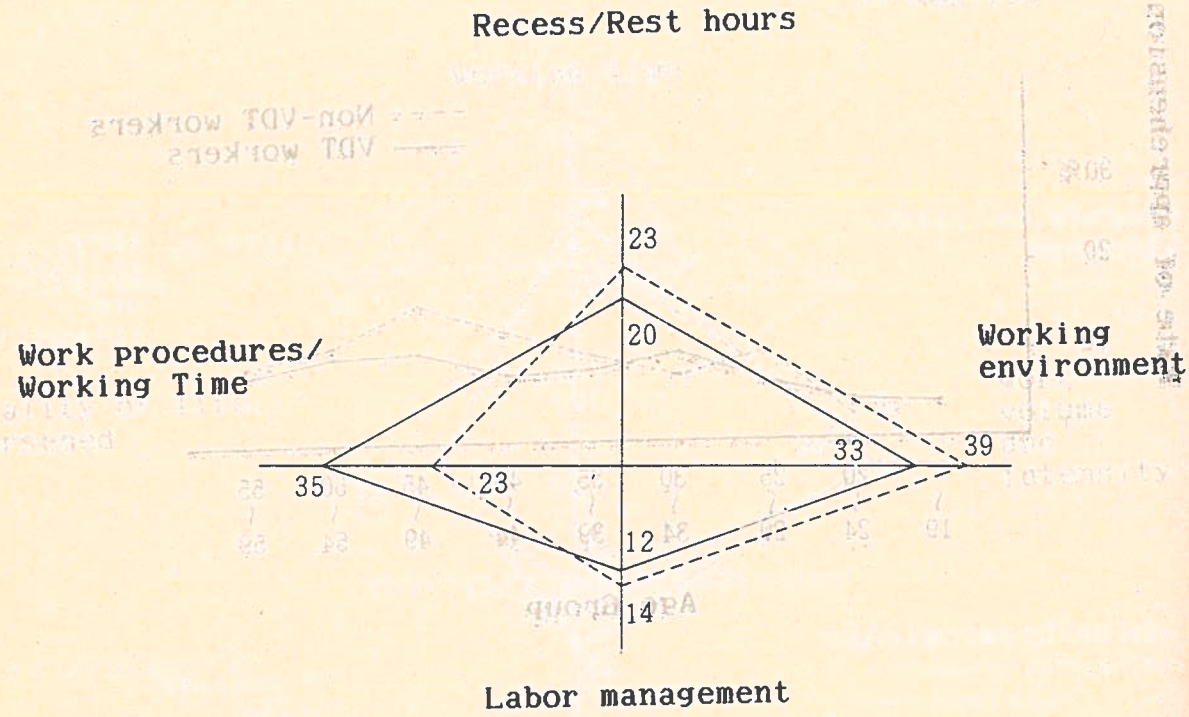
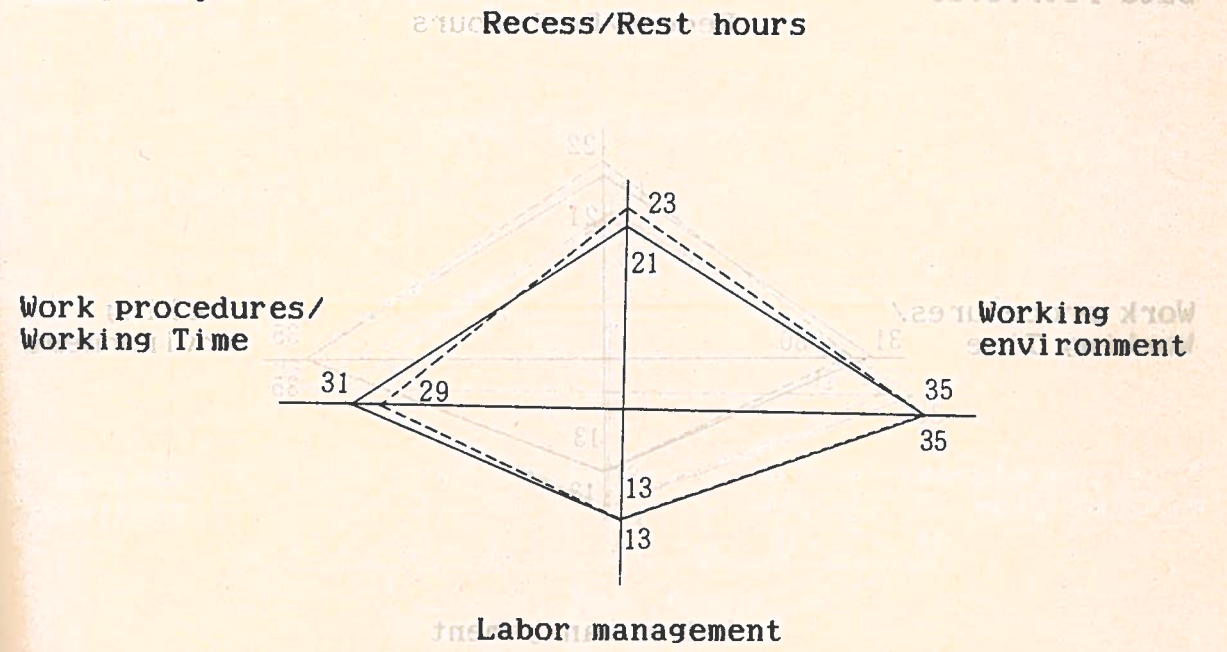


Chart No. 6- 6-1

Issues for Improvements on VDT Work
(By VDT Task)

— Average
--- Data entry

— Average
--- Data entry



— Average
--- Dialogue

— Average
--- Dialogue

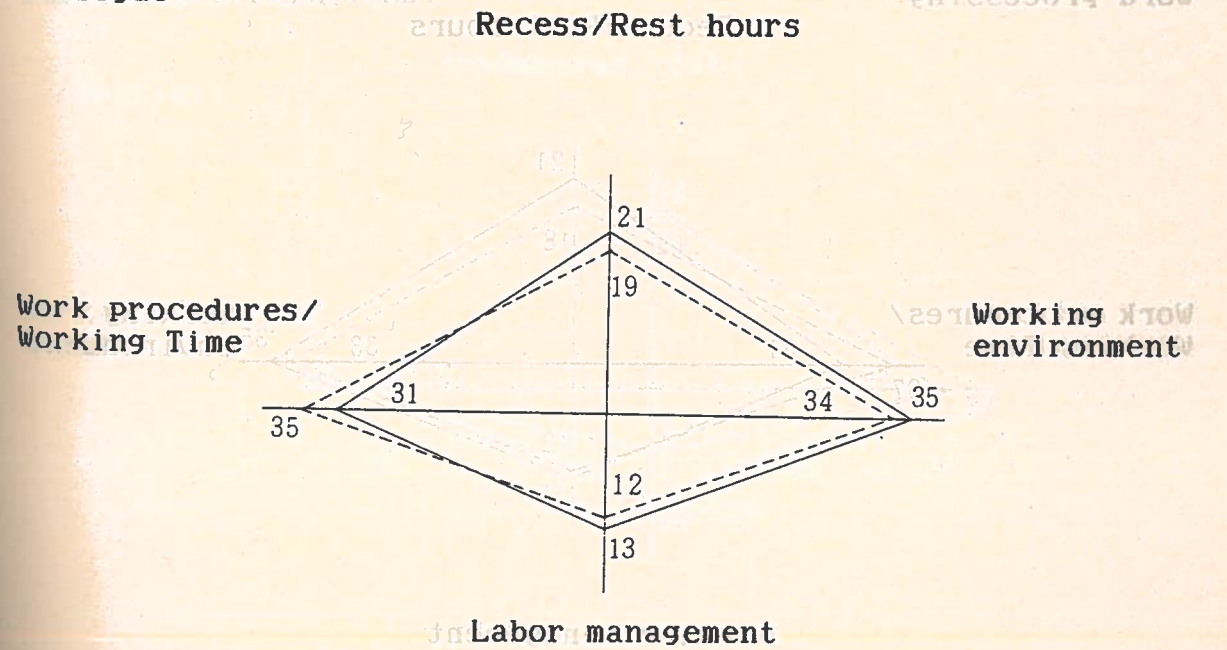
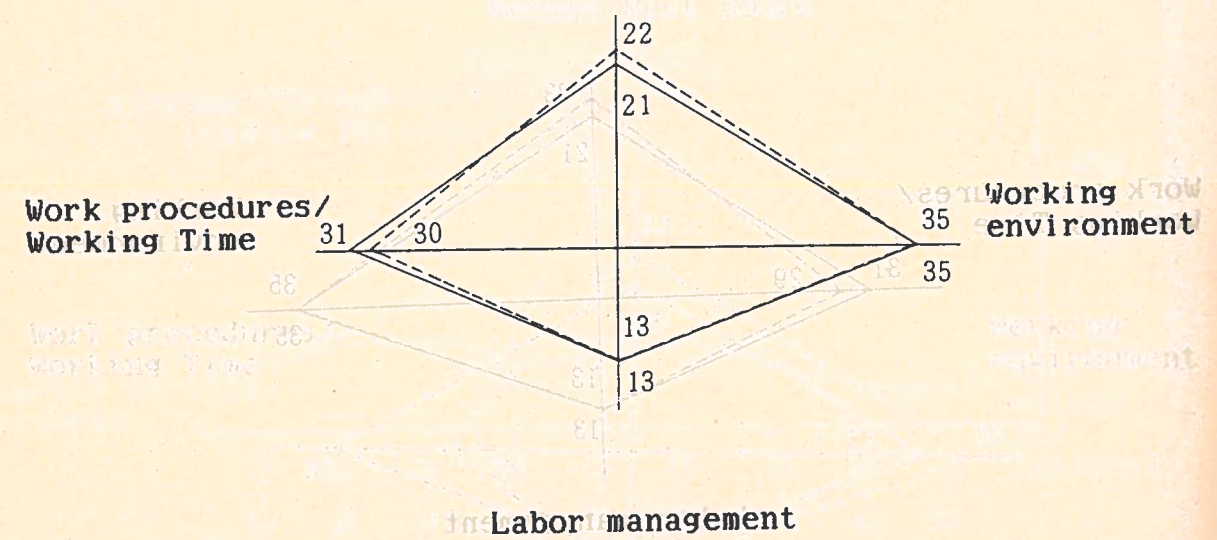


Chart No. 6-6-2

Chart No. 6-6-1

Issues for Improvements on VDT Work
(By VDT Task)

— Average
--- Data retrieval
Data retrieval
Recess/Rest hours



— Average
--- Word processing
Word processing
Recess/Rest hours

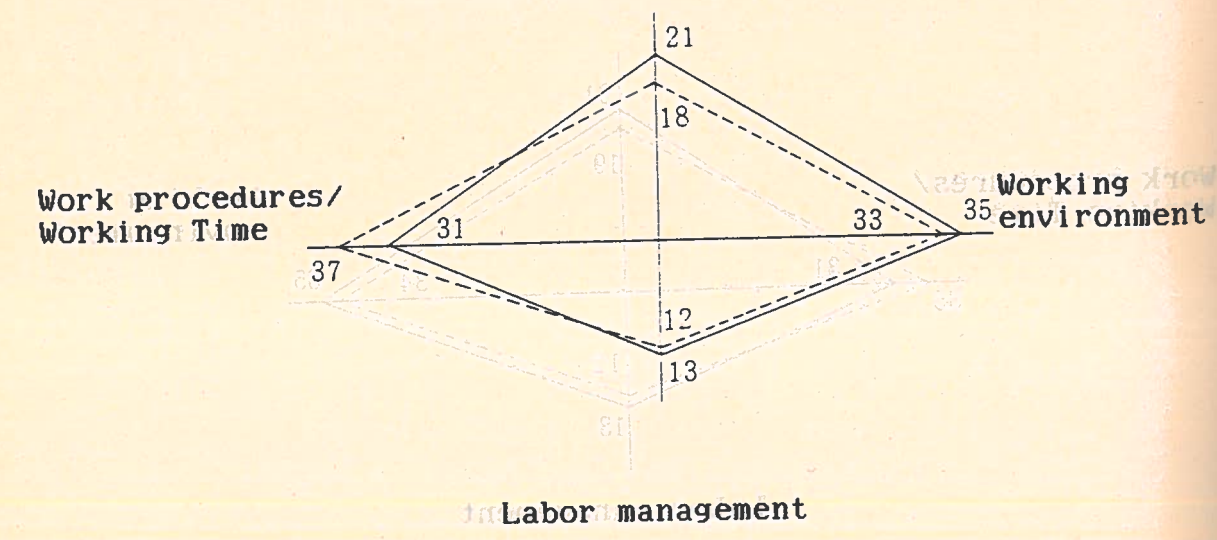
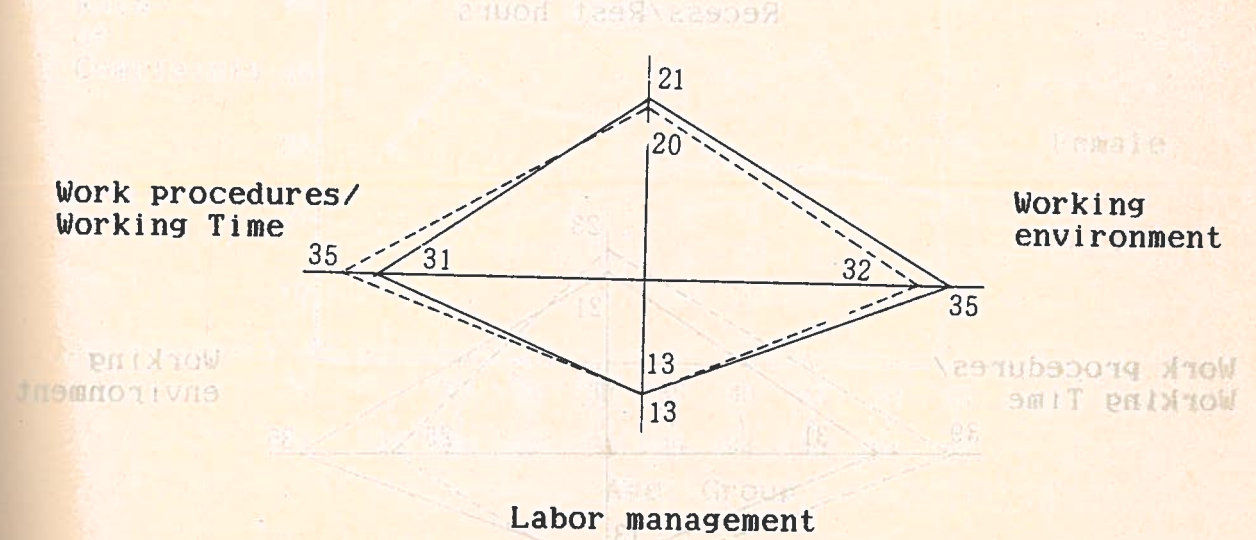


Chart No. 6-6-3

Chart No. 6-6-2

Issues for Improvements on VDT Work
(By VDT Task)

— Average
--- Monitoring
Monitoring
Recess/Rest hours



— Average
--- CAD
Designing/Drawing (CAD)
Recess/Rest hours

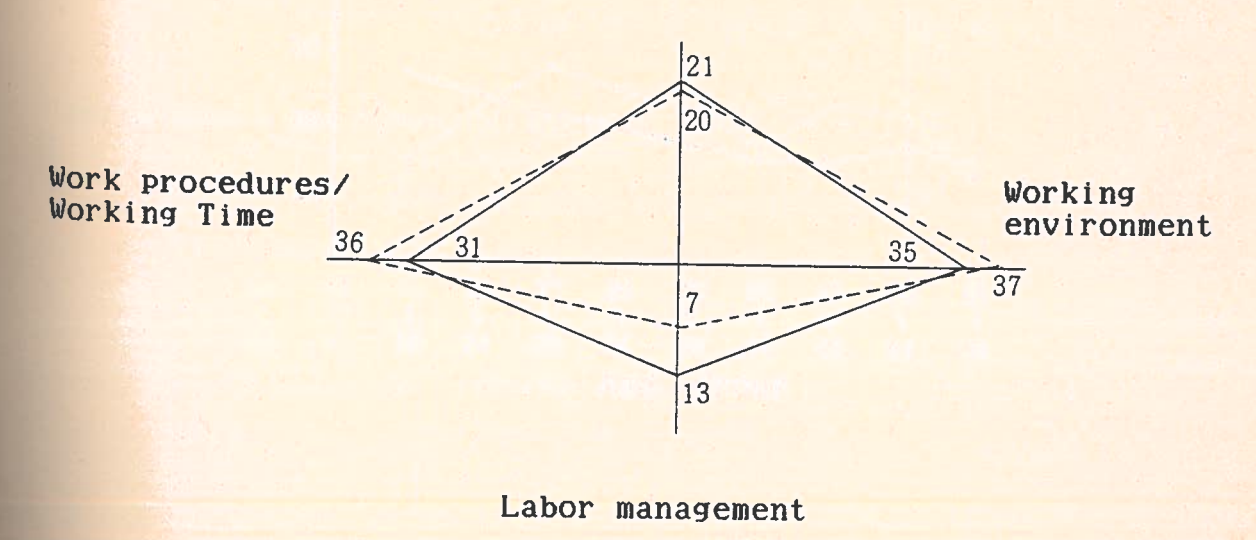
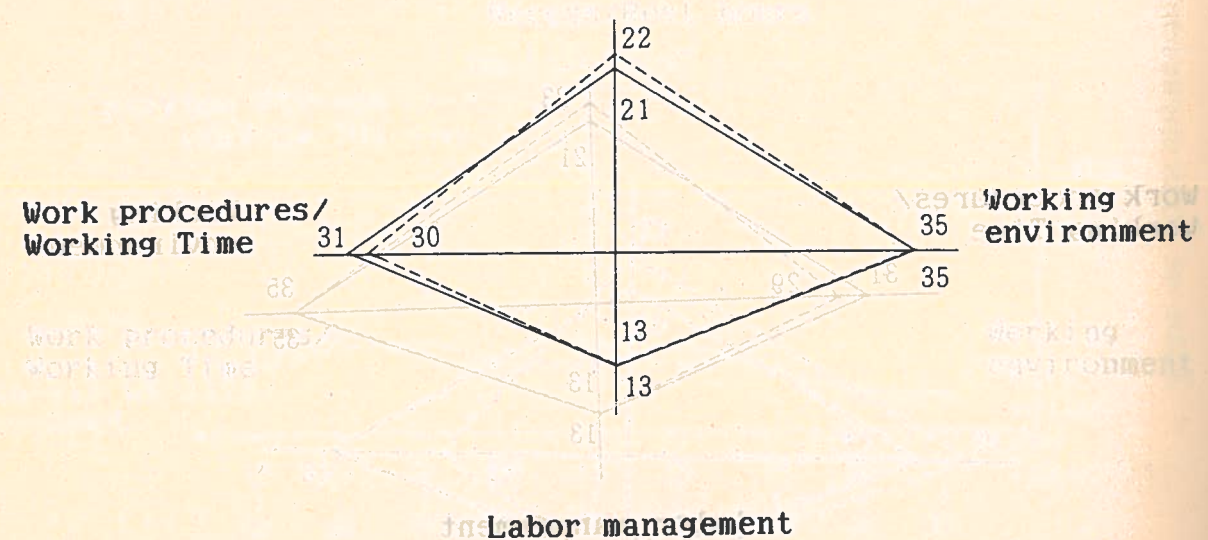


Chart No. 6-6-2

Issues for Improvements on VDT Work (By VDT Task)

— Average
 --- Data retrieval
 Data retrieval



— Average
 --- Word processing
 Word processing

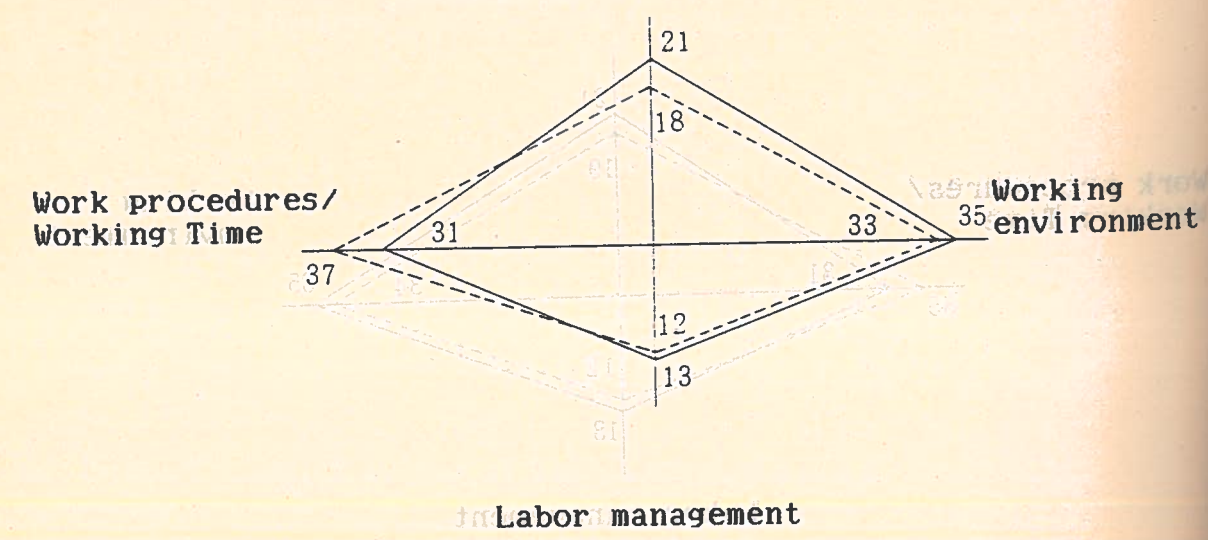
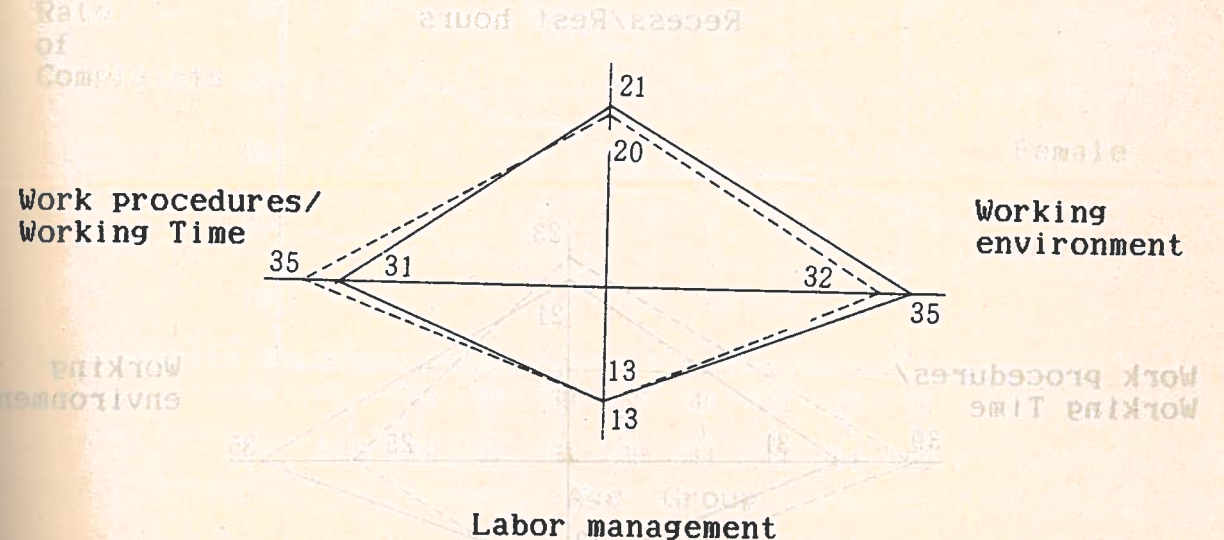


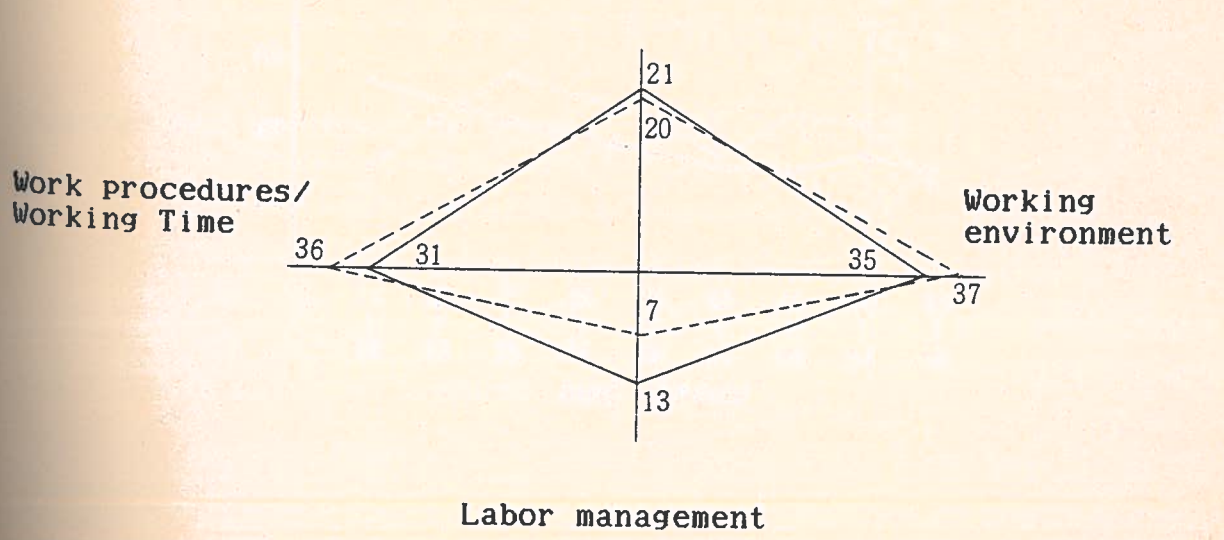
Chart No. 6-6-3

Issues for Improvements on VDT Work (By VDT Task)

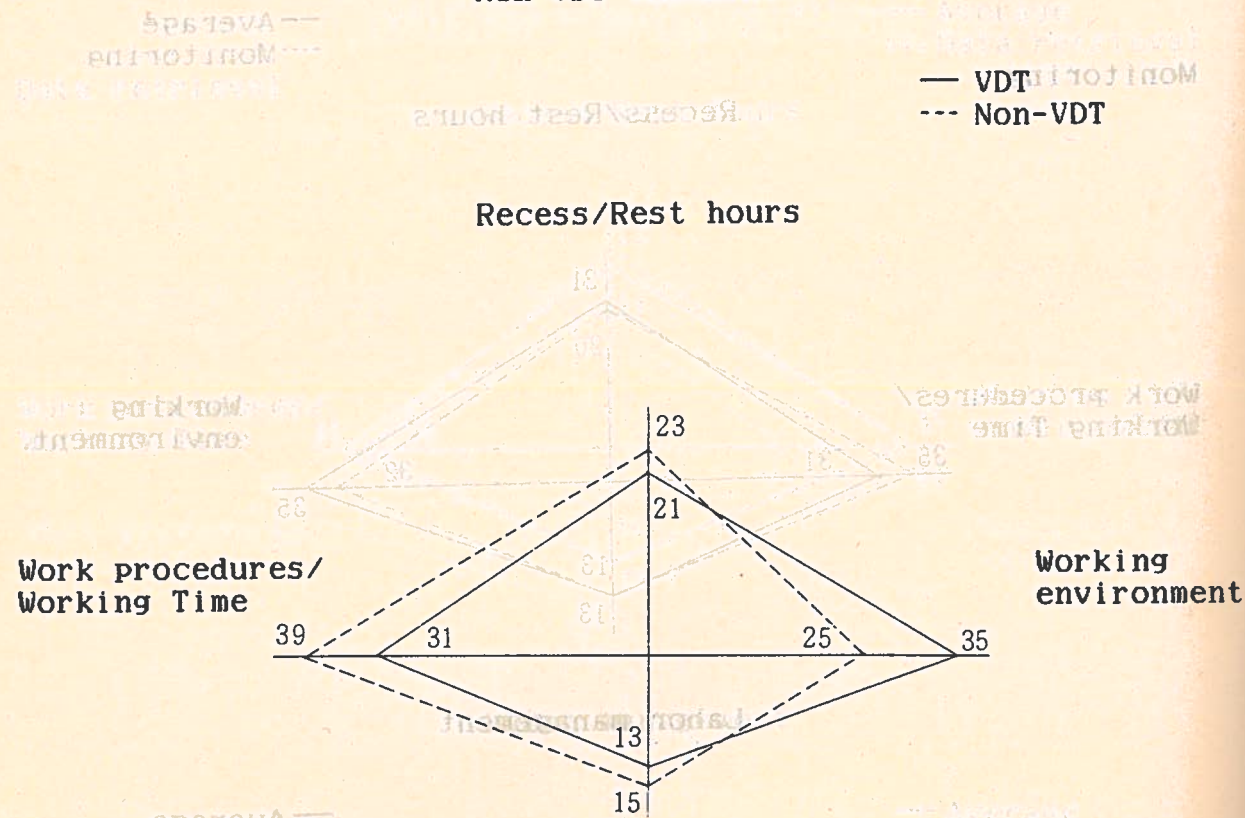
— Average
 --- Monitoring
 Monitoring



— Average
 --- CAD
 Designing/Drawing(CAD)



**Issues for Improvements on VDT Work
(Comparison Between VDT and
Non-VDT Workers)**



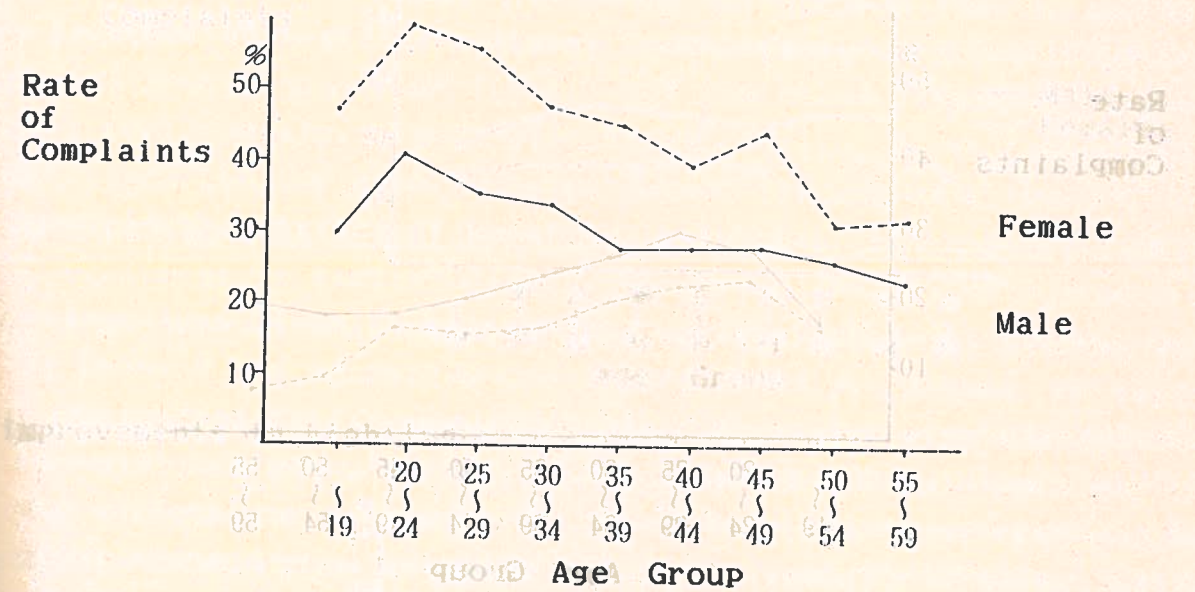
Average
CAD

Labor management

Working environment

**Issues for Improvements on VDT Work
(Comparison By Issue, Age, Sex)**

**Improvements on Air, Ventilation, Temperature
Conditions in VDT Workstation**



Need for Rest-Room for Workers' Lying Down

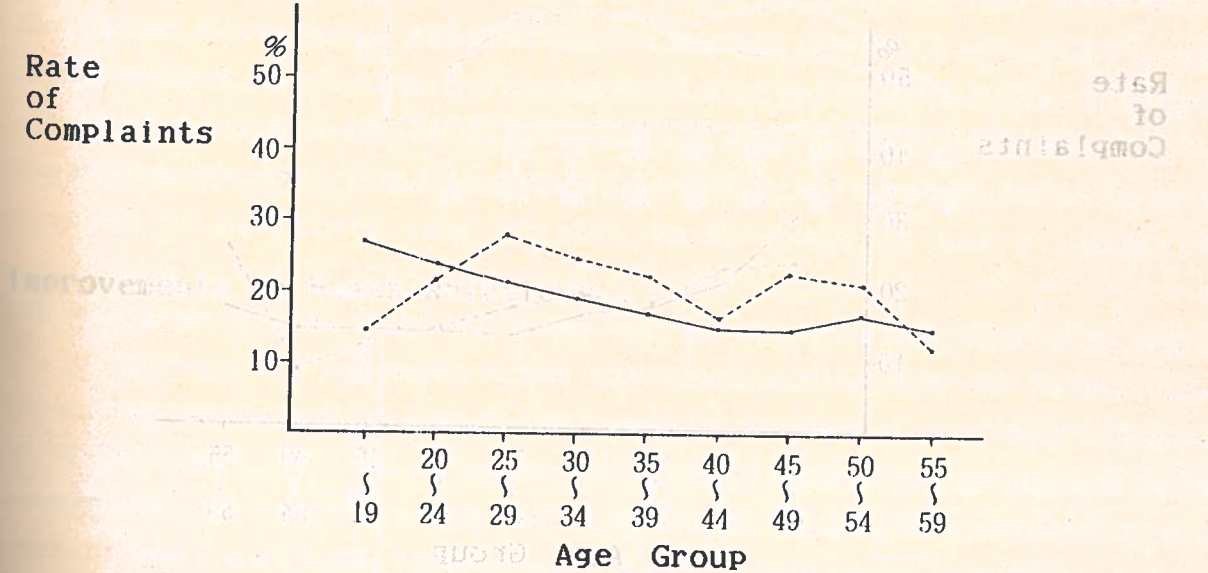
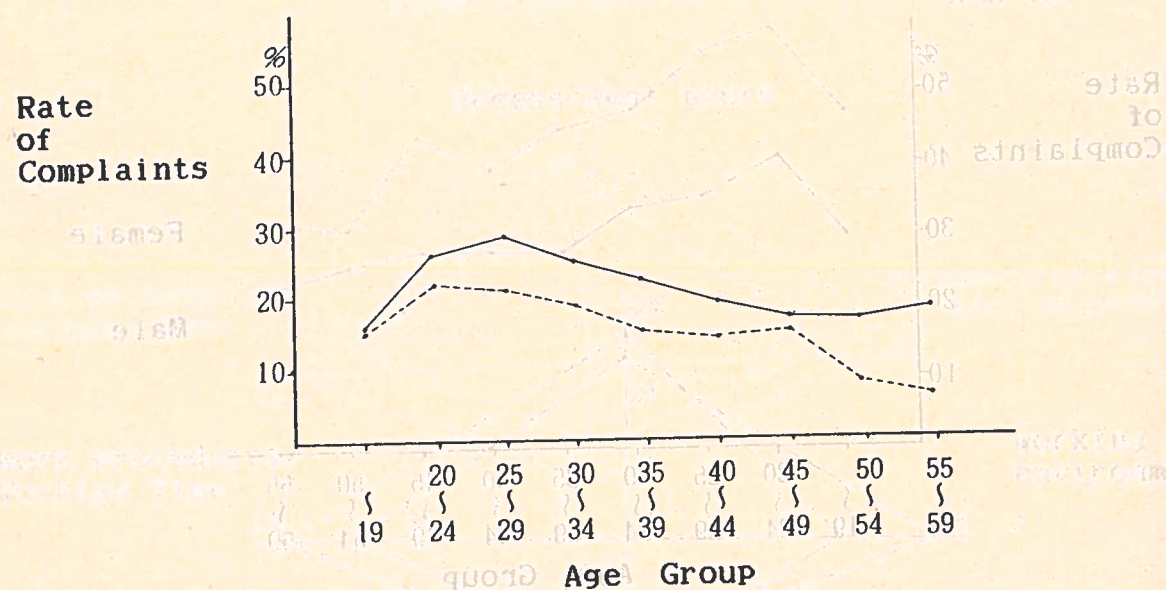


Chart No. 6-8-1 (Cont'd.)

Issues for Improvements on VDT Work
(Comparison By Issue, Age, Sex)

Improvements on Work Procedures and Processing Order



Increase of Recess Time

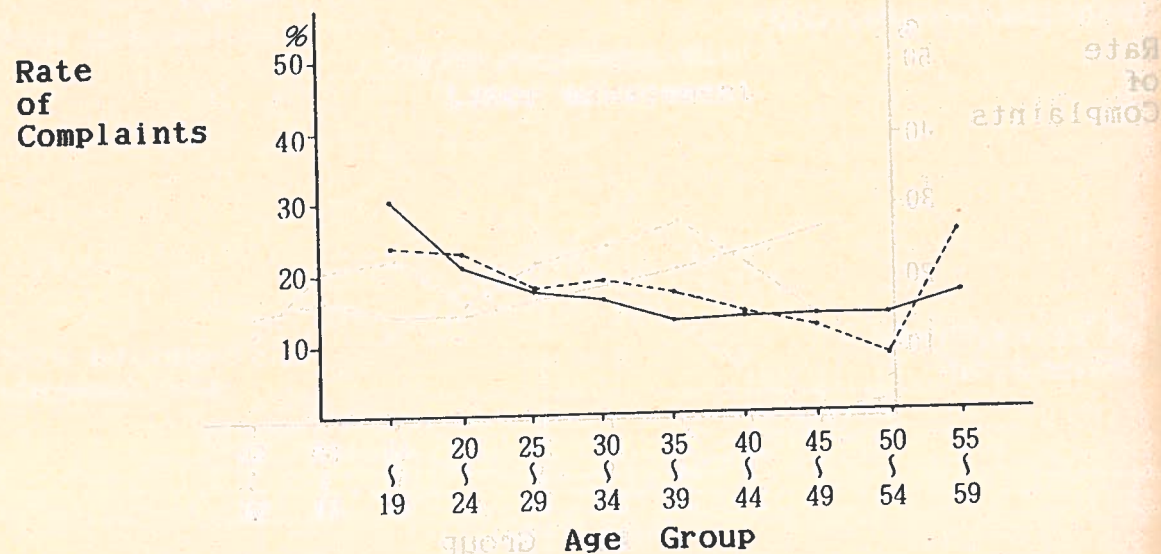
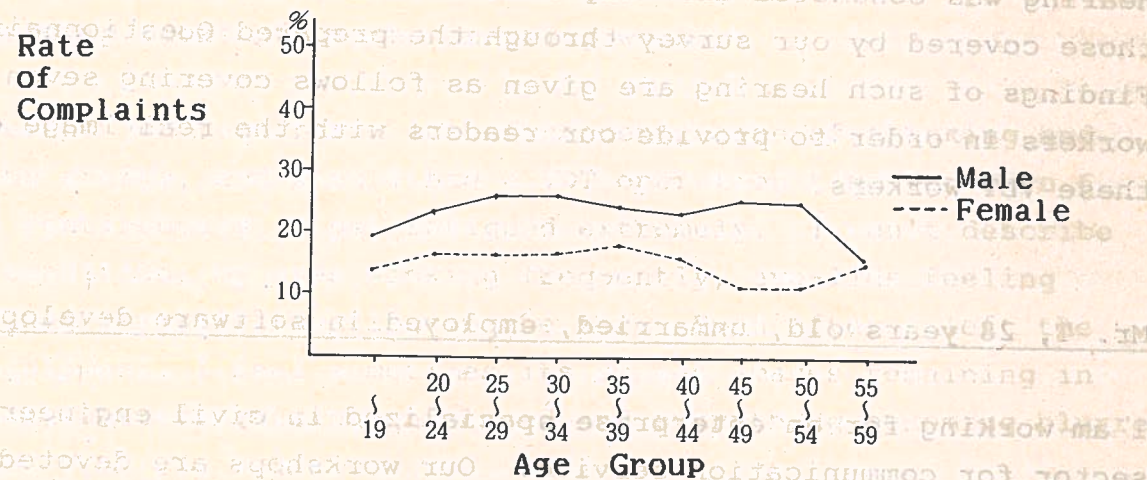


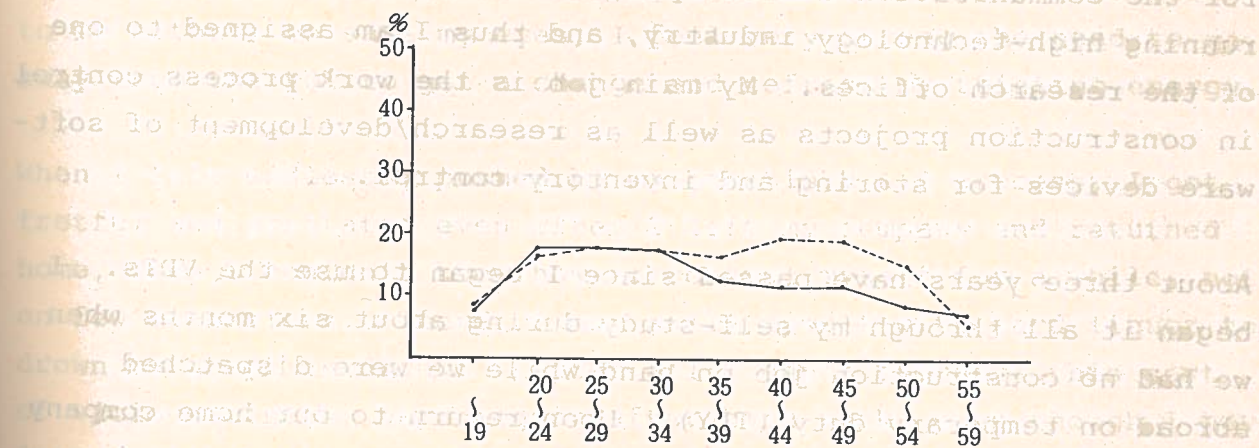
Chart No. 6-8-2

Issues for Improvements on VDT Work
(Comparison By Issue, Age, Sex)

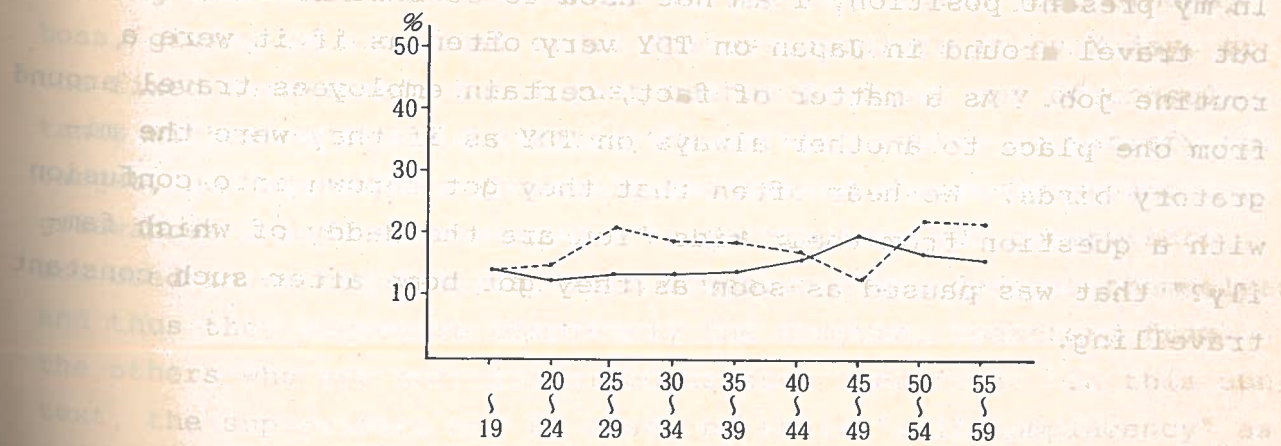
Reduction in VDT Operation Hours



Improvements in Lighting



Improvements in Human Relations



CHAPTER VII - Real Image Of VDT Workers

Hearing was conducted directly with 120 workers selected from those covered by our survey through the prepared Questionnaire. Findings of such hearing are given as follows covering seven workers in order to provide our readers with the real image of these VDT workers.

Mr. T, 28 years old, unmarried, employed in software development

I am working for an enterprise specialized in civil engineering sector for communication service. Our workshops are devoted to research and development (R & D) of computer-aided technology for the communication allied operations to live on the fore-running high-technology industry, and thus I am assigned to one of the research offices. My main job is the work process control in construction projects as well as research/development of software devices for storing and inventory control.

About three years have passed since I began to use the VDTs. I began it all through my self-study during about six months when we had no construction job on hand while we were dispatched abroad on temporary duty (TDY). Upon return to our home company in Japan, I was assigned to my present job.

In my present position, I am not used to be sent overseas on TDY but travel around in Japan on TDY very often as if it were a routine job. As a matter of fact, certain employees travel around from one place to another always on TDY as if they were the migratory birds. We hear often that they got thrown into confusion with a question from their kids "You are the daddy of which family?" that was paused as soon as they got home after such constant travelling.

My workstation has all the walls on three sides and thus I feel it as a closed room, with a sensation of strong oppression. Moreover the room space is so narrow and the printers are so noisy that very often I am used to get irritated as I can't concentrate my ideas about the on-going work. My present job requires a lot of concentration of thinking and working energy, and when I had a VDT operation time for 5 to 6 hours continuously, I got fatigued extremely. I can't describe that condition; my eyes winking frequently, eye-lids feeling heavy and I myself floating in the air. Even after I left the VDT equipment, I feel sometimes its screen images remaining in my eyes, letters getting unfocused and everything becoming blurred.

At such a moment, I am used to take a break for about 20 minutes to look around the outdoor scenery absent-mindedly. In addition to my efforts to save my eyes, I feel very strong the need to go away from the VDT to get a change and refresh my thinking energy.

When I felt endlessly pushed by my jobs in R & D process, I got fretful and irritated even after I left my company and returned home, then I couldn't know how to control myself for a while, not on few occasions. There, I may swill myself with hard liquor to drown my grief in drink. After all I can't overcome this sort of vicious circle, hard liquor after hard work, even though I have intended to eliminate it.

Looking into this uncontrollable irritation, I can just find my boss, giving me his usual order "please complete it by X day, or the fixed dead-line", but I just cannot find out any of consultants with whom I could discuss the working system to satisfy the target, nor any others who could understand the deadlock and grievances I have encountered. In particular, our supervisors are used to be not familiar with computer-aided devices themselves and thus they segregate completely the computer operators from the others who are not classified as such operators. In this context, the supervisors may be beset by their "self-complacency" as

they consider the problems at issue as those applying to the computer operators only.

In conclusion, if these things were left discarded, I should have a strong fear that I might not be able to live a normal life even after I am married. I know all of our fellow workers and supervisors have already declared "this job cannot be done unless you were unmarried." I can say that our trade unions should make it a must to cater for the individual members on an individual basis case by case.

Mr. K, 28 years old, unmarried in accounting duties

I am a 28 years old single man, employed by a private company, assigned to its finance section. After graduation from a university, I have been in this job for six years already, using the VDT equipment.

I have had quite a confidence in my health as I had been with a support club during my school days, but nowadays I have a bad condition with my eyes, my eye-sight downed from 0.7 to 0.2 during the recent three years, and now I am wearing the contact lenes. I am prone to be constipated, tired with a fatigue that went to the neck and shoulders, and thus even a slight move bores me. I know my own father died when he was still young due to hard working on the job, and therefore I have been particularly careful about my own health, usually consulting with the doctor much earlier.

However, I am recently feeling that I can't stand for my job and workplace.

My job comprise receiving all the vouchers from all the sales branches by the first week of each following month, keeping books of them, checking them, replacing and supplementing them with

other relevant ones, which are done by data entry into the VDT equipment, and all of this seems to be rather simple. The VDT equipment is located in our ordinary office, and I am bothered on the job by reflection of the outside lighting/sources, sitting on a common chair for clerical work which I have found rather inconvenient for my work.

Usually I have a rush hours, or a peak of my job, during the first ten days of each month. During this peak period, I am required to keep working even on Saturdays and Sundays, with my weekday's working hours lasting until 10 o'clock at night. That is all overtime work, which runs up to 70 hours a month on the average. During the last ten days of each month, I may take a leave at least. This overtime covers the workload I am forced to complete. With the additional income from this overtime work, I can maintain my decent life. Because I am living on a cheap labor so far as my straight pay is concerned. The threshold of the continuous daily hours for this simple VDT work which I am doing might be one hour a day at most. But I can say this kind of VDT work would last for ever. I do wish to get the VDT screen enlarged, the number of bits (RAM) increased and make it all easy to handle for our ordinary workers.

We have our own trade union organized at our company level, but I can't say it is much useful. Here again I do wish my union to do its best for settlement of the vocational diseases and other health issues involved in the VDT work.

At any rate, our jobs are exposed to accumulated fatigue. My job is all composed of three kinds, that are watching the VDT screen, making copies of documents and vouchers, and using the accounting machine. It is rather monotonous and accordingly it bores me to fatigue as I have usually to dispose, all by myself, the vouchers as many as those lined up in one whole cabinet. Different from the duties at the sales section, my job does not

require me to meet the customers from other companies at all, leading me all to irritation more and more. The workload is always inclined to pile up during the first part of each month. In addition, many of the supervisors at the workplace of finance and accounting are "simple", and this makes our jobs more difficult and dissatisfactory. Worse to say, we are required to fill out the Quality Control (QC) work-sheet, requiring 15 minutes to do with each sheet. After all, I have to work much overtime, driving myself to an extreme hardship, and I am just to find myself tired to death, if not, a total exhaustion.

If any one tells me to stay on this job for another 5 year period, that advice sounding just like an order to me "Go to hell!" This is not a job proper for university graduate. Even committing a crime, get me away from this job.

Mr. C, 40 years old, unmarried, employed on contract for R & D of software devices

Mr. C is an engineer specialized in research and development (R&D) work and now he is an employee on contract with Company S of data/information processing business. At present he is 40 years old, unmarried. He has worked as an on-contract employee already for 4 years, his contract expiring each year, good for renewal. As a matter of fact, prior to this piece-meal employment, he had once worked for Company S as one of its regular employee. He finally retired from it as he got sick with the Co's labor management, physically exhausted in view of his age, and thus he began to work for the same company again, this time, as an employee on an individual contract, or a lent-a-worker for all calls from outside agencies. In other words, he is dispatched from Co. S to any user outside the company on software development jobs under the contract between the company, his legal employer, and the user, the temporary utilizer of his service for the piece-meal jobs as designated by the latter. So he cannot know by himself where he would be dispatched to a new job from the old one, both outside

Co. S.

At present he is dispatched to a computer maker (whose products are developed by Co. S). There the employees of five different categories are working together; namely few regular employees from Co. S (the first category), the on-contract employees belonging to Co. S (second), others dispatched from a sub-contractor, a software company, under Co. S (third) including the on-contract employees belonging to Co. S (fourth) and finally some of regular employees belonging to the computer maker (fifth). In short, there a combined labor force, comprising five categories belonging to three different employers, all working jointly on one project. Here is another occasion that Mr. C changes his own employment status, that is, when he goes to one user, who has issued an order to one of the products produced by the computer maker, to work on that product, he is in a status of not being an on-contract employee (the second category) of Co. S but of the regular employee for the computer maker (fifth). From the stand point of the user, he or she could have a good reason to suspect why a worker is coming from a source different from the one to which the user has issued an order to get a product. Under such circumstances of the employment status and working requirements, the concerned employee, in this case Mr. C, has many implications in respect to the so-called human relations. This sort of software development work requires a working team comprising members who are very congenial with each other, Mr. C said.

Further he has stated: I have been working with VDT equipment for the last eight years, but it has made nothing wrong with my health, except for a conjunctivities I once suffered from, but even that accident I believe had nothing to do with my job. When there is a short period left for delivery of a product or the delivery is imminent, we feel we are oppressed, but even that event has never distorted my health. Since I am an on-contract employee, I am not covered by the health examination regulations, but even so I am thinking that I must be examined regularly by some doctors.

The contract made between Mr. C and Co. S provides for the conditions of 180 working hours a month, the daily wage payable once a month in a lump sum, and one day of paid leave a month. The premium is payable to overtime worked, that running up to 40 to 50 hours or 170 hours a month at maximum. I cannot refuse the overtime work as I suspect whether my contract could be renewed next year in case I have refused it.

However, on the other hand it is said that the regular employees of Co. S have to work much longer overtime, sometimes throughout night, and some of them cannot stand for it. It means that the on-contract employees have no permanent security of employment, without good working conditions sometimes, but they abide by the Co's regulations less strictly than the regular employees. Probably it is the Co's policy to exploit the regular employees while they are young and change their status to the on-contract employees when they get older, to the middle ages, and keep them working under the easy or easier conditions.

Mr. C uses the VDT equipment for all hours a day, because it might be inconvenient for him if the daily time limit is put on the VDT work. He can take breaks so autonomously that he is satisfied with the present time schedule. There is a trade union organized at the company level, but these on-contract labor, or the non-regular, cannot join it. If he were asked about the union's effect, it may hamper their jobs to work on R & D projects for software development, he would answer.

"This job is advantageous to the younger all the more. I have no idea to stay on this job at this company for another 5 years. By saying so, I cannot find myself fully prepared for my third job, or for changing my life plan. . . ." stated Mr. A.

There are many unmarried fellows among the computer specialists. So is Mr. C, 40 years old now, who told us finally "If you have a family, you can't follow the job probably."

Mrs. M, 27 years old, regular employee, English word-processor operator

"Whenever I sit at the VDT table, my fetus starts 'quickenings'. It was in the 5th month when I started realizing this quickening, without fail, about 20 minutes after I sat at the VDT table. Even after I departed from the VDT, still it kept the strong fetal movements for about one hour."

She told us, expressing the fear prevailed around that time, all about the on-going movements of the fetus. She is one of the employees of a foreign petroleum company.

"I had no morning sickness, but as soon as I faced the VDT I got sick. I had a near miscarriage during the second month for the first time and then another one during the sixth month. I had quite an abnormal parturition, with an irregular circumnutation, atony-caused bleeding, aided by blood transfusion. I can't believe that the sounds of severe 'quickenings', a sign of extremely strong movements of the fetus, had no connection with my VDT work. Later I consulted with the doctor of obstetrics and gynecology to find out that I better refrain myself from the VDT work and thus at present I am more engaged in the manual operation jobs rather than any others connected with the visual display terminals.", she continued.

"As regards my working environment, I must refer to the trade unions in our company that the secondary union (splinter) was set up about 10 years ago. That is to say there are two unions. I am not affiliated with any of them. I had a shock to find out, upon my return to the job after my child-delivery, the two of my co-workers, female, had joined the secondary one. Since I have a clear-cut point of view that I have nothing to do with anything other than my job and that I should not be influenced by the so-called human relations in respect to my union relations. For example, when I take a nursing time on the job, the female co-

Mrs. M. 27 years old, regular employee, English word-processor house-keeping. I can't recover from fatigue within one day, and I am short of sleeping hours, badly occupied by house-keeping and nursing. If possible I want to get away from the VDT work.

Previously I worked at a computer workshop, the room temperature being adjusted to the needs of the machines. Once my menstruation lasted for a period of more than 20 days, in addition to severe abdominal pains. Twice I suffered from a systitis. Sometimes my job gets too busy to enable me to go to the toilet, while the workstation is kept too cold since its temperature is adjusted to satisfy the machines only. Do you want to stay with the Office Automation (OA), knowing that you can't become a career woman in future? I don't.

workers show me their unpleasant attitudes, even though my nursing time does not give them any direct impact, by increased workloads. Since my workplace is dominated by the men, it is difficult for me to take my physiological (menstruation) leave. The VDT connected jobs are all imposed upon the women only. For instance, letter drafts were given to us, women, always after they repeated re-drafting. These men might consider the VDT work not as the regular one; may be they suspect our VDT jobs are done for the sake of a hobby by virtue of the 'personal computers'?

"I have certain grievances and others to be improved or corrected by the company. The VDT workstation space is absolutely too narrow. Since the VDT workstation is simply divided by a partition in one room, the printers cause big noises, bothering us extremely. Our working tables are too small, the lighting is just a direct one, unshaded. We have submitted our complaint on this case, but nothing has been bettered because they don't like to have any conflict and they do dislike their subordinates who raise any grivances. Even regarding the work performance evaluation, there is no yardstick based on the jobs, but it is rather based on the individuals who have or have not affiliated with the secondary union, and if not, a promotion would be deferred. Too heavy workloads for the wages we are receiving."

"Are you asking me whether or not I shall stay on this VDT work, aren't you? I am now doing the ordinary clerical work in parallel with the VDT job. If I should stay on the job, only I can do the VDT work for 2 hours a day at best. At any cost this is the workplace dominated by men, they criticize us when we take our entitled menstruation leave. This cannot be said a workplace we can joy to work at all."

"Both I and my husband work outside home, and thus our mother takes care of our child. He is not an employee over-dedicated to his company, but even so he can't usually get home before eight o'clock at night. I am not expecting much of his cooperation in

Mrs. U, 38 years old, permanent employee of hospital as clerk

Mrs. U is a medical office clerk of a public hospital, a receptionist of out-patients and applicants for medical examinations, and an accountant of medical charges, etc., by use of the VDT devices. The VDT work is somehow essential to this job, the workplace being dominated by the women workers.

And she replied as follows to our interview. "During my pregnant period, I had a fear about my new experience, through the newspaper information from the Western and North American countries over many cases of miscarriages and still-birth, and thus I kept the VDT screen and keyboard separated away a little more, and received kind cooperation from the men workers to refrain themselves from smoking in the same workstation, particularly because I had been diagnosed by a doctor of a near-miscarriage and advised to keep quiet. During the period from the second to the fourth month the bleeding did not cease. Even under such a condition, nobody did replace me in the VDT work, and I had to stay on it. Finally during the seventh month I was almost to have a miscarriage at a stake, but kept reporting to work only until the ninth month, without any work of house-keeping at all, finally to have a premature birth during the ninth month. Due to these developments I was much delayed in recovery from the parturition and I had some bleeding for a considerable period after the birth."

"At my workplace the VDT workers are equally treated as the ordinary clerical workers. I worked on the VDT for 5 to 6 hours a day even during my pregnancy period. A recess I had just for lunch, almost none for other reasons. It was not unusual for me to keep working on the VDT very continuously for 3 to 4 hours a day. I surrendered to my boss my doctor's certificate about my health and pregnancy inter alia, but my boss did nothing good for me, while I had a slight desire that he might transfer me to a light job. But I went through the hard time at any cost by virtue of good help from the men on the job in the same crew."

"At any event I realized I did need at least a 30 minute break each in the morning and afternoon for a pregnant woman. As my pregnancy was advanced, I was used to get tired soon, as you can guess. For the average workers, at least a 15 minute break is needed for each hour of VDT work. Moreover, we do need the Rest-room where we can comfortably lie down to take breath."

"Upon introduction of the VDT devices, the workers of more than 50 years old started working at these VDTs. They are more suffering from heavy fatigue as compared with others of the ages of 20s up to 30s. It seems so hard for them to watch the screens, wearing the spectacles for the aged, but they would never speak out about the VDTs, bad for their health, probably because of transfers they would have to take if they were dissatisfied with the VDT jobs. We want our trade union to look into the labor standards to be applied to our jobs, with a special reference to these middle aged and elderly people. Many of the VDT workers are visiting the psychiatry doctors, probably in or not in connection with their VDT work, while we can see more workers suffering from the so-called 'neurose' - neurosis - syndrome."

"I am enjoying my family life. Family responsibilities, such as nursing and routine housekeeping, are shared equally between me and my husband. For instance, he is used to bring our kid to the creche, and I bring our kid home. Anyway I need more time for my office work, going to the crech and dinner preparations at home. Always I am short of sleeping, I want to sleep much longer, and take a rest. At present, my mind is occupied by raising our kid."

"In the five years future?..... I may have been on the same job, even though I have no particular intention to do so."

"This is about all for myself who is working at a public hospital that is supposed to examine and treat any patients. How poor are my working conditions!"

Miss I, 27 years old, unmarried, permanent employee as System Engineer

"My work is interesting and I am enjoying it. Our regular customers are the banks for which we are developing the so-called "Hand-held Terminals". Its objective is to reduce the number of VDT operators assigned to each Branches of Banks. It has the very implications that our products are sold for Reduction-in-Force (RIF) of VDT operators, that we are employed by this Company to kill some of the VDT operators of other companies or banks by and by. If I should quit because of that reason, can I find a similar job with this sort of pay I am now getting from our Company, quite equal to the men's salaries?....."

"I have a fair enthusiastic feeling for my job. Quite interesting. Because, I am in the same job with those of men, and I hope it is linked with the career life. I am also doing the overtime. My VDT work lasts for 4 to 5 hours a day. At most it goes up to 10 to 12 hours a day sometimes including overtime work. The average overtime may be about 2 hours a day. As our jobs have a peak on and off, we can't help it. When we look at the men workers staying on the overtime work running up to 100 hours a month on the average, I can't complain of the overtime work I have to follow.....!"

"Although I like my job, my health conditions are not so good that I feel always fatigued. For the last one year, I have been to watch the display of the personal computer, and thus my eyes are bloodshot, the neck and shoulders get stiff, the astigmatism got advanced and eyesight weakened. Very shortly I have got a new pair of spectacles. Among ourselves, it is said the eye troubles are part of our fate; if your eyes are not damaged, it means you are no good at VDT work. Really we find it quite difficult to watch the cathode-ray tube. I hope that type of picture tube should be replaced by a quartz (liquid crystal) as early as possible."

"I was beset by a mental unrest. As our Company had no job on hand and I was dispatched out to its subsidiary company, I was harrassed by an obsession as soon as we were forced to catch up with the delivery date for personal computers. I was hardly able to stand for the critical situations, comprising the noises from air-conditions and printers, heavy smokes of cigarettes, which we were usually not much worried about. In addition, then, during my sleep I had a dream of my working on 'debug' in programming.... Moreover, as regards our apprehension of other things, one of my fellow workers had a miscarriage, which might not have any connection, causes and consequences, with her VDT work. But the government and the VDT maker have done nothing with her case, neither our trade union did anything to take care of her case. Eye troubles are just concerned with her, one person, but the case of her child can't be finished within himself or herself. Definite explanations should have been given to the case of my fellow worker to satisfy herself and others concerned."

"What shall I be in a five years future? I can't know about it at all. Probably I might be in a dispatch status. Last time, too, when I was dispatched to a subsidiary company, I suspected I might not be sent back to the parent company because I was in the group dispatch on the basis of our Department en Bloc. This is the second time of dispatch for myself. People say that my workplace is dominated by women, but some one has said that a programmer as a university graduate could be only one element among the workforce of subsidiary, or satellite, companies at best....."

Mr. Z, 35 years old, Public Servant of one of Central Government Offices, married, with one child, a co-worker's family

I belong to the Statistics Agency in charge of statistical surveys over the nation's health situations. Five years I have spent to work at VDTs. I am a section chief. By myself, I use the VDT for

2 to 3 hours a day, covering the job to check the data entry and data retrieval. My section keeps two men and three women, 30 years old on the average, keeping nine VDTs altogether for one Department including our Section. VDTs are to be used to meet our functional requirements, but we are not forced to use them. But I don't want to see myself left behind alone, and thus I am using the VDT at any cost even though I am not compelled to do so.

Since I was employed initially by this government agency about ten years ago, I studied much about the computers very eagerly. Today, I consider myself that I have been well manipulated by our employer.

As I have already replied to Question No. 39, I was once suffered from a duodenal ulcer. Longer hours work at the VDT and electric calculator would cause stomach troubles, without fail, upon the workers, together with their eyesight weakened, like my case. It is quite ironic that I got my health deteriorated while I was working on research work over the nation's health and physical examinations. This not a job to be done by a worker over 30 years old. After that age, every one would get sick with it.

The VDTs are used to get flickering and glaring when they are exposed to reflections of outer lighting sources.

The troubles we have now since we have started to work at VDTs are that we are easy to forget how to spell words, the chinese characters "KANJI" in particular. Sometimes it becomes more difficult to spell out the KANJI. That is why this job is not suitable to us any more after we get to the ages of 30s and above.

Are you asking me whether this sort of work at Office Automation (OA) is linked with our career life in future? I guess it will not be linked to it. Without their involvement, some people have

followed the line of the elite.

I have a dark image of my job in a five years future. I have a feeling not like to keep working on the computer-aided jobs. About my own section? I believe that one VDT is increased for each section now, but that our workforce is reduced.

Our overtime work is 2 to 3 hours a day on the average, sometimes lasting up to 10 to 11 pm. Probably a total of 20 hours a month. Our trade union is now stronger than it was at "Kasumigaseki", among the trade unions under various ministries. What is our trade union is doing with the vocational diseases? Since some of our members are staying on the VDT work even after they have got pregnant, I can tell you what that you can guess by yourself.

What is my family service? Just I have a family members, just once a year. That is all.

The work of fortran and cobol is quite troublesome I have no idea to stay on the VDT work in future.

Male (Professional Engineers/Technicians) (**)

No.	Individual Status	Job Requirement	Working Environment	General Conditions of Jobs, Workplaces, Labor Administration
	Male, 22 years old, Unmarried	Civil Servant, Program development, Trouble-desk work	Inefficient air-conditioning, Noisy	- Shortage of manpower and budget; workloads increased without effective manpower allocation - Ineffective communication on the jobs - No understanding from other workers; hard work is not appreciated
	Male, 32 years old, Unmarried	Broadcasting work, To produce computer graphics	Workstation is too small Want to keep the green colors, like certain plants, in workstation	- Few member working there; only I can understand my own jobs, so that cannot take a leave - Hard pressure on the worker - Do all by myself, though I am not forced to do so. - Job satisfaction over completion of assignment is lessened
	Male, 28 years old, Unmarried	Communication service, To produce software system	Workstation is too small Desk is not for VDT exclusive use	- Supervisor can't know about computer-aided devices; no person available for my consultation - Frequent transfers, dispatched and travelling
	Male, 40 years old, Unmarried	Contract employee Software development	-	- Travelling from the Permanent job, due to hard work, physically endangered, in view my age unsuitable any more; but no other job available; re-employed as "on-contract employee" - Once resigned from the Company, due to the restrictive labor administration - Less job security for the on-contract employee but not so restricted as the Permanent employee - Pressed by work when delivery of products is imminent

(*) This Table covers the recapitulation of findings over a number of questions through the hearings from 11 persons selected among 120 persons responded to the hearings conducted under this Survey.

No.	Trade Union (TU)	In 5 years' future	Career perspective	Health conditions	VDT work (**) threshold	Others
	TU has no proper understanding of computer work; Discriminate us as the elite workers to the contrary	Wish to be transferred to others	None	Eyes, wrists tired, painful, stomach pains, Asthenia, Melancholia to refuse reporting to work	1 hour (3 hours)	
		Age limit at 35		Mental fatigue (caused by overall work burdens); Can't recover from fatigue even after sleep; refreshment by sport recommendable, but no time for it		
	TU must grasp the workplaces	Wish to the production workshop	Not workable at large	Mental stress Eyes tired	30 - 60 minutes (4-5 hrs.)	Can't get married
	TU is obstacle to software production	No desire to stay on this job for another 5 yrs.; but no idea of my life plan for future		Nothing particular to be mentioned	Time restriction is unacceptable because I am on contract employment	Can't stay on the job if 2 were married and had children

(*) Continuous operation time per day

Male (Ordinary Job Category)

No.	Individual Status	Job Requirement	Working Environment	General Conditions of Jobs, Workplaces, Labor Administration
	Male, 28 years old, Unmarried	Private Co. Accounting/ Finance	VDT devices are located in the ordinary office room; Reflection of outer lights	<ul style="list-style-type: none"> - Job peak during the first part of each month - Stress accumulated due to job monotony - Not suitable job for a college/ university graduate
	Male, 35 years old, married with a child	Civil servant Shipcrew licence registration sector	Noises from printers Ineffective air-conditioning	<ul style="list-style-type: none"> - Increased workload on individuals due to reduction in force; workload increased but manpower reduced - Enjoyable job just for the first month; later all controlled by machines - Easily get tired as controlled by machines
	Male, 35 years old, married with a child	Civil servant Statistics & Editing of survey reports	Ordinary chair Dazzling outer lighting	<ul style="list-style-type: none"> - Jobs getting busy/complicated/sophisticated - Feel being forced by others, even if not forced so in fact
	Male, 26 years old, Married with a child	Civil servant Programming of stock inventory & wage accounting, & other statistics	Desk/Chair height unadjustable Ineffective air-conditioning	<ul style="list-style-type: none"> - Job assignment so imbalanced that all prone to go to one person - Heavier responsibilities more than those for abilities - No more mistakes allowed - Get nervous due to poor human relations - No labor force increased commensurate with jobs
	Male, 33 years old, married with a child	Civil servant Clerical work To produce general ledgers disposal of transfers/ changes	Ineffective air-conditioning Noise	<ul style="list-style-type: none"> - Deteriorated human relations - Can't express what I want to speak out - Intensified labor administration

No.	Trade Union (TU)	In 5 years' future	Career perspective	Health conditions	VDT work (*) threshold	Others
	TU only take care of problems, having our working conditions	Staying in this job for 5 yrs. means an order to me "Go to hell". Just want to get out of here. Reduction in force is unavoidable	None	Eyesight weakened, eyes tired Overall fatigue/ no energy	1 hour (1 hours)	-
			Worsening of working environment	Asthenopia Stiffness in shoulders Mental fatigue	50 minutes (3 hours)	Problems lies in the idea that introduction of computers allows reduction-in-force to take place immediately
					As women	
		Dark image Don't like to do computer-aided jobs Enjoyable for younger workers, but unpleasant for those of age of 30 or above	None	Fatigue in eyes, shoulders, fingers Doudenal ulcer Stomache troubles	(2 hours)	-

(*) Continuous operation time per day

(*) Continuous operation time per day

No.	Trade Union (TU)	In 5 years' future	Career perspective	Health conditions	VDT work (*) threshold	Others
	-	Reduction-in-force Only confined to my own job, can't see the overall picture of our project	Could be limited with the career job	Mental fatigue Asthenopia	1 - 2 hours (4 hours)	Worried about jobs remains in head even on my return to home Mental insecurity
	Wish TU to conclude the central to organize the future perspective	Wish to quit this job Have submitted already to do my request for "voluntary transfer"	Not at all		50 minutes (2 hours)	To improve human relations

(*) Continuous operation time per day

Female (Specialists)

No.	Individual Status	Job Requirement	Working Environment	General Conditions of Jobs, Workplaces, Labor Administration
	Female, 27 years old, Married with a child	Data entry, Data retrieval Preparation of Designing, research & Study, General clerical work, programming	Wish to get it in a positive display Incomplete lighting and office layout Height of chair is unadjustable	- High tension due to heavy responsibility - Jobs worth to do also
	Female, 27 years old, Unmarried	System development	Reflection of outer lighting	- Jobs are enjoyable - Based by work during the peak for delivery of products - Criticized that "a university graduates as a programmer is a worker only needed by a subsidiary company"

No.	Trade Union (TU)	In 5 years' future	Career perspective	Health conditions	As women	VDT work * threshold
	TU may be good or bad for VDT workers In this context, the TU showed raise its voice	No wish to keep it on in future	Advantageous for a career life	Asthenopia Eyesight weakened Shoulder (L) is dull Skin sets darker	- Can't take menstruation leave - Can't work if I set pregnant - Husband also sets home 11-12 o'clock at night	
	TU is just to join the company to convince the VDT workers to quit working	Might be dispatched to any of the company's subsidiaries	Can be a career woman, because I am doing the job with the men.	Astigmatism Eyes bloodshot Neck and shoulders disordered	My fellow workers got miscarriage	Development of "hand-held terminal" would lead to reduction in force at banks

(*) Continuous operation time per day

Female (Ordinary Job Category)

No.	Individual Status	Job Requirement	Working Environment	General Conditions of Jobs, Workplaces, Labor Administration
	Female, 38 years old, Married with 2 children	Window service at hospital. Data entry of hospitalization charges for inpatients and similar data entry for outgoing patients and insurance charges/benefits	Desk and chair are all unfit for the job. Workstation is too narrow	VDT work during pregnancy period (about 5 hours a day). Threatened by bleeding and miscarriage, but no special arrangement advised from Hospital to Company. Trade Union had no policy to take care of the pregnant. Quite hard work, with duplicated fatigue by VDT work and pregnancy. In order to avoid any of the fetus, I relocated the keyboard to avoid the light from the screen while typing the keys. Men workers helped me a lot in this respect.
	Female, 25 years old, Unmarried	Manufacturing company as keypuncher for checking of vouchers, invoices and data entry of these slips	Poor lighting	At most 50,000 strokes a day during a 8 hours operation. Stress worsened due to human relations. Got fretful due to impossibilities to take a recess during the peak hours.
	Female, 27 years old, Married with a child	Manufacturing company as a general-affairs clerk to work on VDT devices (Non-union member)	Workstation is too narrow noisy, with poor lighting and chair's height unadjustable	Men can't understand our work since they don't use the VDTs, and force us to do it. First and Secondary Unions make our human relations difficult since female co-workers join the Secondary. I can't wish to stay on, the jobs at this workshop. Sexual discrimination does exist, because the management(men) try to force us join the Secondary.
	Female, 31 years old, married with 2 children	Company connected with construction Ministry Electric Dept. Data entry, Checking & adjustment	Ineffective lighting. Difficult to adjust height of chair	Monotonous job. I have no interest in my present job

No.	Trade Union (TU)	In 5 years' future	Career perspective	Health conditions	As women	VDT work * threshold
	TU power is lessened. Practice of its rights seems difficult/impossible. We expect our TU to cater for health issues, shorter working hours with a 5 day workweek	I'll stay on this job for another 5 years. Younger workers would replace us as they are more capable and the job for us, the older, would set up lighter	Might visit my life	Severe pains in the back, palsied and trembling with fatigue (during the peak of 3 years). As jobs became light and comfortable, any symptoms would disappear.	Keep any children of 5 yrs. old at a creche, spending 1 hr. 30 m. on one way. I want to sleep more and rest longer. Menstruation leave is more hard to take (easy to do so in the past). We requested for setting up of Rest-Room since 3 yrs. ago, but no action taken by the management	2 hours (5 hours)
	Believe TU keeps its autonomous power to check the work controlled by the management	More comfortable for us then as workloads would be reduced. Don't wish to keep this job for ever. I am told I might get worse and suffer from any after-effect by the VDT work		Once suffered from basedow disease (hyperthyroidism). Shoulder stiffness, languor, pains in eyes, light tendovaginitis, cervicobrachial syndrome, and spinal erethism	Trying to regain myself from taking Menstruation leave since it would impose more workload to other key-punchers	30 - 60 minutes (3 - 4 hours)

(* Continuous operation time per day

No.	Trade Union (TU)	In 5 years' future	Career perspective	Health conditions	As women	VDT work * threshold
	The first TU has only 100 members, with no power to dominate. Positive impacts are doubtful	Harder work imposed more VDT operators. More workloads, with less work-force. Don't want to keep working at the present workstation	Can't be linked to it	Dangerous near miscarriage during pregnancy. "Quickening" of fetus became abnormally strong during my work on Word processing. After child-delivery, I am trying to lessen my WP job, according to the doctor's advice. No day is passed without eyes tired, vision worsened, and fatigued more.	Difficult to take Menstruation leave, because other co-workers would criticize. I have kept working ever after child-delivery, but every mother quit working, because the management has paused to make us so away. This workplace is dominated by men, with women as routine office labor	1 hour (2 hours)
	Our TU has done nice job with the industrial accident involving a keypuncher.	Working about my job to be kept or not when a new generation of VDT devices is introduced. Want to stay on the job, but as it is so monotonous that I have to reconsider its contents in future.	Nothing to do with it	Asthenopia Pains in hands and fingers due to certain tasks.	Last year I delivered a child, luckily enough, when it was not at the peak of work but I worried much about effects of my job upon my health during pregnancy	1 hour (4 hours)

(*) Continuous operation time per day

Female (Specialists)

No.	Individual Status	Job Requirement	Working Environment	General Conditions of Jobs, Workplaces, Labor Administration
	Female, 30 years old, Married with a child	Commercial company Business Dept. computer and telex work (already resigned)	Ineffective air-conditioning No window	Short of manpower, Controlled by machines, Circumstances are bad, not encouraging us to work. No confidence in supervisors. Everybody is fretful and irritated. Due to introduction of computers, we can see clearly overall situation of sales and business transactions, making our jobs more intensified. Individual performance evaluation led some to transfers in terms of demotion.

No.	Trade Union (TU)	In 5 years' future	Career perspective	Health conditions	As women	VDT work * threshold
	No TU organized	Office automation of each section/department has been integrated. My own job disappeared to be done by anybody	Might be linked with it	Eyesight weakened. Eye tired. Pains in back, waist and arms. Medical doctor advised me that no medicine to cure it but for resignation from the job.	Since 5 yrs. ago, menstruation leave is not paid. Difficult to take it, but use my annual leave for it. Almost every woman resigns as she gets pregnant.	1 hour (-)

(*) Continuous operation time per day

Others
Last year I resigned after 8 years' work. Because, (1) After marriage, my new house was too far from the office, taking too much of time for commutation. (2) Wanted to have a child. (3) After introduction of new components, it was difficult for me to resign, but as everything got on the stream, I felt the job. (4) Difficult to keep working due to cervicobrachial syndrome.

No.	Trade Union (TU)	In 5 years' future	Career perspective	Health conditions	As women	VDT work * threshold
	The first TU has only 100 members, with no power to dominate. Positive impacts are doubtful	Harder work imposed more VDT operators. More workloads, with less work-force. Don't want to keep working at the present workstation	Can't be linked to it	Dangerous near miscarriage during pregnancy. "Quickening" of fetus became abnormally strong during my work on Word processing. After child-delivery, I am trying to lessen my WP job, according to the doctor's advice. No day is passed without eyes tired, vision worsened, and fatigued more.	Difficult to take Menstruation leave, because other co-workers would criticize. I have kept working ever after child-delivery, but every mother quit working, because the management has paused to make us so away. This workplace is dominated by men, with women as routine office labor	1 hour (2 hours)
	Our TU has done nice job with the industrial accident involving a keypuncher.	Working about my job to be kept or not when a new generation of VDT devices is introduced. Want to stay on the job, but as it is so monotonous that I have to reconsider its contents in future.	Nothing to do with it	Asthenspia Pains in hands and fingers due to certain tasks.	Last year I delivered a child, luckily enough, when it was not at the peak of work but I worried much about effects of my job upon my health during pregnancy	1 hour (4 hours)

(*) Continuous operation time per day

Female (Specialists)

No.	Individual Status	Job Requirement	Working Environment	General Conditions of Jobs, Workplaces, Labor Administration
	Female, 30 years old, Married with a child	Commercial company Business Dept. computer and telex work (already resigned)	Ineffective air-conditioning No window	Short of manpower, Controlled by machines, Circumstances are bad, not encouraging us to work. No confidence in supervisors. Everybody is fretful and irritated. Due to introduction of computers, we can see clearly overall situation of sales and business transactions, making our jobs more intensified. Individual performance evaluation led some to transfers in terms of demotion.

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(*) Continuous operation time per day

Others
Last year I resigned after 8 years' work. Because, (1) After marriage, my new house was too far from the office, taking too much of time for commutation. (2) Wanted to have a child. (3) After introduction of new components, it was difficult for me to resign, but as everything got on the stream, I felt the job. (4) Difficult to keep working due to cervicobrachial syndrome.

1. Complaints about sore eyes:	Working Environment	Status
1) My eyelids get twitched with cramps in and around eyelids. When work goes on for hours concentratedly, acute pain is felt at the back of my head and around shoulders. On such occasions, I need pain killers before I go to bed. (Male in early 40s, regular, a broadcasting staff)		
2) My eyes have become extremely sensitive and tears flow with dust or sweat. There is ringing in my ears all the time. (Male in early 20s, regular, a VDT operator)		
3) Flickering of the display terminal tires my optic nerve. My eyeballs become stiffened. When work lasts long, my head feels heavy and I lose my judgment easily. Too much contact with the computer leads to lack of communication with coworkers - lack of human relationship. (Male in late 30s, regular, a system designer)		
4) Visual fatigue results from continuous contact with the terminal and fine-print figures on it. My eyesight has become weaker as the work is done in a small basement room without windows and with electric lamps alone. Ability to measure the distance has been weakened, for instance when a ball comes toward me, it looks dim and blurred and I cannot judge the distance. (Male in early 20s, regular, a wholesaler)		
5) Due to fatigue of my optic nerve through constant observation of figures on the display unit, I have lost a will to work and live in health. (Male in early 20s, regular, a public servant engaged in a clerical work)		
6) My eyes get "dry" and tired while working on the display terminal. Close attention required to minimize mistakes and noise of the machine cause heavy nervous fatigue. Coolness and lack of humidity of the room make workers extremely thirsty. I was transferred to another shop to cope with the findings of the regular health check, which did not include detailed examination of abnormalities of hearing and neuralgia, etc. that I have. (Male in late 20s, regular, a public servant in shift system)		
7) After long hours of work at the visual display terminal, my eyesight has been seriously impaired. Eye lotion must be applied all the time to cope with dry eyes. (Male in late 30s, regular, a manufacturing worker)		
8) When looking at white walls or blue sky, I see hundreds of mosquitoes flying inside my eyes. (Male in early 40s, regular, an office clerk in a transportation company)		

- 9) Letters written in white on the blackboard look pinkish. (Male in early 20s, regular, a printing technician)
- 10) My retina feels burnt during the work. My eyesight has weakened from 0.7 to 0.1 degree. (Male in late 20s, regular, a VDT programmer)
- 11) Fatigue is felt in my eyes - a kind of feeling that eyeballs get heated. At the same time, arms become numbed. The use of visual display units makes workers servants of the machine because workers have to observe strict time control set by the machine. (Male in early 20s, regular, a public servant doing a clerical work)
- 12) When my physical conditions at the time of office-going are compared with those of office-leaving, my eyesight is so terribly weakened that letters on the calendar could not be read easily. When much work has to be done on the terminal, suffering is greater. The base of my middle finger is painful, also. (Male in early 30s, a released worker)
- 13) When I got job at the present company, my eyesight was 0.8 and 0.3, which has so much worsened that I have to wear glasses now, even in my daily activities. Long hours of work at the display unit give so much pain to my eyes; every thing looks blurred. Mental instability has resulted in lack of job involvement, affecting relationship with people around me. (Female in early 20s, regular, a VDT operator)
- 14) Fatigue in my eyes seems to have changed my sense of colours. Lowering of my eyesight is great, which worries me. Stiffened neck and shoulders is irritable. Lack of hours for talks with coworkers has become greater mental strain. (Male in late 30s, regular, a VDT operator)
- 15) I have more work accumulated at the end of the week. On the day I rest, I put a cold towel on my eyes, liniment around my neck, and take pain killers often. I am suffering from insomnia of exhaustion. (Female, regular, an office clerk)
- 16) After finishing work on the machine, sky looks green for some minutes. I hate looking at things closeby. I have ringing in the ears and have lost the power of concentration. I am afraid that my mind gets worse, too. (Female in early 30s, sent exclusively as a VDT instructor)
- 17) My eyes are sore after the work on the display unit because I have to look at tiny figures and charts. Towards the evening, tears flow out and I cannot keep my eyes open. When possible (for instance, typing letters) I try not to look at the terminal. Due to too much burden on my shoulders, arms and fingers, I am worried that I may have shoulder-arm-neck syndrome. Also if radioactive ray leaks out from the machine or not worries me. (Female in late 30s, regular, a VDT operator)

- 18) My eyesight at the time of my entry into the present company was 1.5 but has fallen to 0.2. Suffering from astigmatism newly, it is now hard to read train schedules, advertisements or captions of films. I feel as if somethings very heavy were on my eyelids all the time, which makes me feel unpleasant to watch the TV. Sometimes, I feel my middle finger very heavy, too. (Female in late 20s, regular, an accounting clerk)
- 19) My eyesight has weakened greatly. When playing pingpong, for instance, I miss balls often. It takes time for me to bring something far away to focus after watching an object closeby. It looks blurred, too. (Male in late 20s, regular, a programmer)
- 20) My eyes become bloodshot and tired after work. Things white look pinkish. (Female in late 30s, regular, a wholesaler)
- 21) My neck and shoulders became stiff about a week after I started working at the visual display unit. I felt pain in my eyes and my eyelids got twitched. All these symptoms were recovered in 6 months after I was transferred to the work in the other section. (Female in early 40s, regular, an office clerk)
- 22) My eyes painful all the time, with more gum collected than before. My head feels heavy when I get up. When my work on the machine lasts long, I feel pain around my shoulders, wrists and particularly above my lower back on the following day. I get dizzy and cannot open eyes for some time when the sunlight is too bright. (Female in late 30s, regular, a VDT operator)
- 23) I was checked and told by the doctor that my short-sightedness had advanced with strong astigmatism. As we have no rest period in the morning, I get extremely exhausted in the afternoon, with headache or nausea. My efficiency decreases on those occasions. These difficulties are attributable to the fact that work converges upon only a few persons. Pains from the shoulders along my backs are stronger than before. Fatigue in eyes causes sick headache on the day I work on the display machine. (Female in early 20s, regular, a worker in service business)
- 24) My eyesight has impaired and faces of people standing far off are blurred. Eyes get tired easily. Driving in the dark is not easy thing for me now. Stars look blurred also. It has become more and more difficult to concentrate due to nervous strain and psychological burden. (Male in early 20s, regular, a programmer of a numerical control machine maker)
- 25) My eyelids get twitched often, which lasts long once starts. Tears flow very easily, too, besides my neck and shoulders get stiff, with pain sometimes. (Male in early 40s, regular, an operator)
- 26) After long hours of work on visual display terminal, I feel pain at the inner part of my eyes. Tears flow easily and it is hard to keep my eyes open. About one year has passed since I started working on the terminal, I feel my eyesight has fallen, and no favorable effect has

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- been obtained by the use of protective glasses. (Male in late 10s, regular, an office clerk)
- 27) My eyes get painful after hours of work at the display terminal, and I feel pain around my shoulders, and headache, too, when work on the machine goes on for days. They advise to take 10-minute rest after 40 minutes of work (inputting), which is not practical as the work has to be completed within a fixed time because the machine is used jointly with other sections of the company. (Female in late 20s, regular, an accountant)
- 28) When I open my eyes after blinking, I see about 10 flecks in the eyes, My eyes are sore while working on the machine. I feel my thinking faculty has also gone down. (Female in early 20s, regular, a salesgirl)
- 29) I feel somethings are always in my eyes. When I go out in the sun, I feel too dizzy and cannot keep my eyes open. Tears flow when I gaze at things. I feel as if I were bent at the back. (Female in early 30s, regular, a clerk)
- 30) I cannot keep my eyes open, and I am not sure where to look at. (Female in early 20s, regular, a pharmacist)
- 31) My eyes are tired, and they feel like dried up. (Female in late 10s, regular, a clerk)
- 32) My eyes are bloodshot, with tears flowing all the time. It is difficult to keep my eyes open in the bright places. My physical fatigue remains days after days, and sometimes I have difficulty in reading. My shoulders are stiff and I feel too lazy to work. (Female in early 20s, regular, a clerk)
- 33) When I work very hard on the visual display machine, I feel my eyes painful and blurred. Besides, I have stiff neck and shoulders when the volume of work is large and heavy. (Female in late 20s, regular, a VDT operator)
- 34) My far-sightedness has advanced and sometimes, I am afraid of going down stairs. Reading books and newspapers is tiresome. My eyes are tired and dried up. My stiff shoulders are due to fatigue in my eyes. (Female in early 20s, regular, a service girl)
- 35) My eyes become painful after hours of inputting on the visual terminal. I feel my eyes dried up. Sometimes, I cannot read the manuscripts due to fatigue. My arms get numb and shoulders stiff. (Female in early 20s, regular, an operator)
- 36) My eyes are painful days and nights. The doctor ordered me to stop the work as I have quasi-far-sightedness. (Female in early 30s, regular, a programmer)

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- 37) My eyes are sore at inner part. It is difficult to adjust the distance. I was hospitalized once due to frequent dizzy spells. I fell stomachache when I am hungry. Almost all the coworkers have their own pills of some kinds to kill their pains. (Male in early 30s, regular, a business man at a calculator company)
- 38) I was a programmer. I worked on programming from September to December, 1983 and had conjunctivitis after I finished programming. (Male in late 20s, regular, a program developer)
- 39) I started working on the word processor and in four months, my eyesight fell to 0.5 and 0.6 from 1.5 of my university days. Then, I could not read show bills in the cars. I continued the work, however, with great apprehensions over my conditions. Eight months after the use of the word processor, I came to be in the worst situation with mental breakdown and nausea at the display unit. I reduced the volume of my work and some of the worst symptoms disappeared. At the second regular health check one year after the start of work on the word processor, my eyesight went up to 0.6. I became more cautious those days, but at one time when I worked for 5 to 6 hours for two days consecutively, my eyes became sore and tired and eyelids twitched on the following day. For the whole morning, I could neither read papers nor account books. I entertain apprehensions over the present situation in which programmers are placed today — the Labor Standards Law is not faithfully observed, work cannot be done in accordance with the plans but influenced by the convenience of those who write articles, and very little information is given in relation to the visual display units. It seems difficult for us to make other people understand the problems involved in it, which allows the company to neglect measures to cope with the situation. Labor environment is not improved at all. (Female in late 20s, regular, a clerk in a law office)
- 40) When I gaze at something, I can see many dim circles of pink and yellowish green around it. When my eyes get fatigued, I feel vomiting, headache, etc. (Female in early 20s, regular, a clerk)

2. Physical complaints:

- 1) I feel languid all the time and my head does not work at all. When I get home, I usually go to sleep for about 2 hours without doing anything. As the office room is cooled down during summer to cope with the heat radiated from the machine, the difference of temperature with that of outside world is too great, which makes us dizzy and sensitive to coldness. I take cold very easily. (Female in early 20s, regular, a key-puncher)
- 2) It happened that my right ear could not catch sounds suddenly. Now, I am suffering from buzzing in my ears all the time. I am suffering from frequent headache, vomiting, dizziness and pain in my eyes. I feel as if all the blood vessels of my eyes as well as my neck had swollen

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up. Besides, I feel pain around my lower back, which remains all the time. (Female in early 30s, regular, a typist)

- 3) I did typing and telexing. In those days, my back was sore and my shoulders were stiff. Since I started working on the visual display terminals, I have had sharp pain and feeling of heaviness around shoulders, back and hips. Regardless of the volume of work I do, I suddenly feel languish around arms, particularly around fingers. I have stiff neck also. As there is little information about the impact of VDT work, it makes me frightened to think that there is actually no one to tell me what I should do to get rid of these pains and other aftermaths. (Female in late 20s, regular, a VDT operator)
- 4) I am suffering from arthritis of jaw joints, visiting dentist's for months. In the beginning when I started VET work, I went through all the symptoms that are written under Question No. 38. As I have been so worried about my health, I have read many books about health. I thought I was seized by hypochondria. All the four girls who were engaged in VDT work had to have their teeth remedied. I am afraid that our posture in typing is not good for jaws. (Female in late 30s, regular, a VDT worker as a clerk)
- 5) I get sick with headache whenever I take trains, planes or buses. My ears start ringing whenever I take trains. I feel sick the moment I start working at the visual unit. I have stomach ache and poor appetite. (Female in early 20s, regular, a typist)
- 6) I have humid tetter on my arms. I get eruptions on the skin whenever I touch pieces of paper. (Female in early 20s, regular, an office clerk)
- 7) I have stiff neck and shoulders. I cannot recover from deep fatigue in a day. I have headache coming from stiff neck. Besides, I feel my arms heavy and get tired soon. Due to noise, not that of the machines, I have difficulty in catching sounds. I cannot concentrate; important matters are easily forgotten. (Female in late 20s, a part-timer clerk of a hospital)
- 8) I have stiff shoulders and stomach ache all the time. I am suffering from cystitis. (Female in late 20s, regular, an office clerk)
- 9) I become irritated and pessimistic easily these days. I am afraid that I might become inhumane when I keep on going with the work on the visual display terminal. (Female in late 20s, regular, an office clerk)
- 10) I have pains on my back and around neck. I am too exhausted by the time I get home and no energy to do anything. I get irritated very easily. (Female in early 20s, regular, an instructor)

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- 11) As I work in tune for the speed of the machine all the time, I feel I have lost my identity, which makes me exhausted. (Female in early 20s, regular, an office worker)
- 12) My shoulders are stiff and my hips are sore. I feel truly worried about my health in future. I have repeated evacuation of the bowels on week days, and get irritated easily. (Female in early 20s, regular, an inputter)
- 13) My fingers pain when I work on the machine for hours. Sometimes, they would not move. (Female in late 20s, regular, an office clerk in a hospital)
- 14) I'm pregnant and work on a word processor. While working, I feel my baby move more violently than it should be. I want to quit the work during my pregnancy, but no sympathy has been expressed by any one around me. They only say that "it will be nothing to do with child delivery." (Female in late 20s, regular, an office clerk)
- 15) I have nettle rash on a part of my face, chest, back since I started my work on the visual display terminal. (Female in early 20s, regular, an operator)
- 16) I feel as if I were carrying something extremely heavy on my back and around neck. (Male in late 20s, regular, a printer)
- 17) I feel my hips so languish and the inside of ears damp. (Male in late 40s, regular, an office worker)
- 18) As I take lunch when work at the terminal is busy, I always feel my stomach heavy. As I don't feel like eating in this way, I get hungry when the work is over. It is a funny feeling. (Male in early 30s, regular, a VDT operator)
- 19) I have hives and humid tetter, which are so difficult to be healed. (Male in early 40s, regular, an aviation controller)
- 20) I have pains all over my neck, shoulders, back, arms, fingers and right half of my body after working on the terminal for long hours. I feel physical strain when I am tired, particularly when my nerve is tense. (Female in early 20s, regular, a clerk in a financial company)

3. Complaints and anxiety:

- 1) I must be alone with the machine, which gives me a feeling of alienation. Sometimes, I am afraid I would lose adaptability to society. (Female in late 20s, regular, a public servant doing clerical work)

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- 2) I am pregnant and worried about the effect of VDT work on a baby. (Female in early 20s, regular, a VDT operator)
- 3) I feel pain in my chest when working on the VDT, and lose appetite. I have constant fatigue around my neck and shoulders, even during my sleep. Finger tips are also heavy, because of which I could not write small letters. I am always worried about my health: something wrong might happen to my health in future. I feel unpleasant about working on the VDT, going to office, too. (Female in early 20s, regular, a clerk)
- 4) Some people get hysterical and take actions that are so abnormal, for which I feel very much anxious. (Male in early 20s, regular, worker in a newspaper agency)
- 5) My arms get heavy easily. I get irritated very often and fear that my power of concentration has become much weaker. I am worried about my future if I should become disabled in my old age. Is it all right for me to become pregnant? Don't I miscarry babies then? Am I able to discharge healthy babies? (Female in late 20s, regular, a VDT operator)
- 6) I feel my mind is filled with something crazy and cannot concentrate. I feel as if my friends were committing suicide, and I would do so, too, very soon. (Female in early 30s, regular, an office clerk)
- 7) I have a headache very often, may be from fatigue of my eyes. I am worried about the effect of radioactive rays upon my body. For instance, my babies may be deformed or I may miscarry babies. To know about it might be too late, I am afraid. There is no other work than the work on the visual display terminals at our places of work. It really is very difficult to find a job. May be I have to choose between babies and jobs. (Female in late 30s, regular, a typist)
- 8) I feel like being employed by the machine. I know very little about the whole movement of the machine. What I know is only the way how to input data. (Female in late 20s, regular, an office clerk)
- 9) I have to work on the machine for long hours. Those in the same place of work suggest me to take rest now and then, which the boss would not understand and support. (Female in early 20s, regular, a clerk)
- 10) I am always exhausted due to intensified office labor accompanied by the introduction of the machine. I am worried about how long I could go on like this. (Female in late 30s, a key-puncher and a clerk)
- 11) Those specified in the VDT work are very tired, and complain of their fatigue, nausea, pains around their shoulders and arms. We can foresee that the VDT work would increase further

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- in the future. Today, we can make an excuse to avoid the VDT work, but I am afraid we won't be so lucky as we are today. I am afraid VDT work will be set aside exclusively for women. (Female in late 30s, regular, an office clerk)
- 12) Considering that the VDT work would increase further in the future, we should not remain indifferent of it. Human beings are being destroyed by the machine they have invented. It may be better for us to go back to the primitive age! (Female in late 20s, regular, an office clerk)
- 13) Relationship among workers at places of work has worsened. I feel like doing the work only to meet with the order from the machine. (Female in late 30s, non-regular VDT operator in a medical office)
- 14) I felt the skin around my eyes itchy, but could not visit the doctor's, as we were fully occupied. One year after the introduction of the visual display units, I became able to type much speedily, but at the same time, I had a shoulder-arm-neck syndrome and attended hospital for about six months. I am worried about the effect of radioactive rays upon my baby when I get pregnant. If no transfer of work places is allowed, I must quit the job, I am afraid. (Female in late 20s, non-regular, a typist)
- 15) As the computer does thinking, I don't have to use my brain. This has lowered my thinking faculty, I am sure. (Male in early 30s, regular, an aviation controller)
- 16) I am worried about my future. I don't think I could go on working on the machine until the days of my retirement physically and mentally, which worries me greatly. Mentally, I am in the state of strain all the time. (Male in late 30s, a VDT operator on regular night shift)
- 17) I get irritated very often these days. I am not satisfied with personnel issue, wages, promotion, etc., and thinking of quitting the job. (Male in late 20s, a VDT operator released from a company dispatching skilled workers)
- 18) I am pregnant. I read in papers that there is a danger of delivering deformed or dead babies. I myself miscarried once and was told by the doctor to remain quiet. The work goes on as usual, however. Some sort of regulations should be made in relation with the VDT work in earliest possible time. Now, those of advanced age (more than 50 years old) have to work on VDT, too. It seems they get much exhausted than young people of 20 to 30. They stay in the same work place because they don't like to be transferred. However, they would not speak up. Trade unions should take more serious consideration of these cases. (Female in late 30s, regular, a clerk at a medical office)

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- 19) VDT work is mostly done by women, although men are being engaged in it little by little. Concentration on visual display units seems too heavy to workers. It is advisable that workers are allowed to do other types of work, too, alternatively. Instead of one person doing all VDT work, every body should be able to manage the machine to avoid concentration of VDT work to one specified person. (Female in early 30s, regular, a clerk at a publishing house)
- 20) Personnel having knowledge of software or hardware are few in number, as the result of which small number of specified persons are ordered to do all the job. Besides, time for working for software sections other than the original section is increasing for the specified. This has brought unpleasant relationship among workers of the same shop. (Male in late 30s, regular, a draftman)
- 21) Priority has been given to introducing visual display units rather than improving work environment. It is very important for individual workers and trade unions to arrange and create favorable shops to cope with office automation. (Male in late 30s, regular, a clerk in supply section)
- 22) Workers in advanced age have difficulties in working on the machine. (Male in late 20s, regular, a public servant doing a clerical work)
- 23) Communication with the machine is greater than that with coworkers. (Male in late 30s, regular, an accounting clerk)
- 24) As I have higher blood pressure than before, I have serious apprehensions over my future. My life on my duty off has changed so much. I am worried about life in my old age. (Male in late 30s, regular, a VDT operator on night shift)
- 25) I am suffering from hematuria resulted from fatigue and coldness of the work place. The doctor suggested me to take rest, but I cannot. Special care must be taken as to air-conditioning during summer. (Female in early 40s, regular, a VDT operator)

4. Complaints of mental fatigue

- (Male)
- 1) Almost every body is suffering from mental strain. Since the introduction of the visual display terminals, the volume of work has increased and become complicated. As mistakes are severely checked, every body is in tension all the time. It has brought about nervous strain. (Other complaints: 1) Suffering from piles, 2) Bloodshot eyes and difficulty in reading) (Male in late

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- 20s, a VDT operator in shift system in a newspaper printing house)
- 2) Nervous disorder: The work is intensive; there are much to memorize, which has made a number of people suffer from nervousness. (Other complaints: Pains around lower back, sore eyes) (Male in early 30s, a VDT operator in shift system in a newspaper agency)
 - 3) After work at the machine, every body looks like a patient of depressive psychosis. (Other complaints: 1) Fatigue in left eye due to an uneasy posture; conjunctivitis due to dust, 2) Stiff neck and shoulders, pain in middle finger of the right hand, pain around lower back, etc.) (Male in late 20s, regular, working in a medical office)
 - 4) Robotization of human beings is promoted by means of office automation at a rapid tempo. In the progress of office automation, greater attention should be paid to create work environment restful for workers through, for instance, promotion of hobbies, general culture or health control. This is important to keep balance with the progress of technology and human beings. Those over 40 years of age are better not to be too much interested in office automation, as it would be hard on them and promote their nervous breakdown. (Other complaint: 1) As long hours of work hurt eyes, I set a limit on myself that I will not work more than 3 hours a day on VDT. In most cases, I apply eye-lotion after the work or look at things far off so that eyesight may not be deteriorated.) (Male in late 30s, regular, a public servant doing office work)
 - 5) Human being is robotized by the work on visual display units. High labor density and long hours of work on the VDT deprive workers of their humanity and make them robots. (Other complaints: 1) I have no time to go to the doctor's, 2) My eyesight has been weakened and my eyes are always bloodshot.) (Male in early 30s, regular, a programmer)
 - 6) "I am of no knowledge of what I am doing." I am in charge of a number of men under my command, and feel extremely worried about the situation in which I have to keep them working on the machine when I myself "don't know what I am working for." (Male in late 20s, an instructor in programming, regular)
 - 7) I get irritated easily with increasing mental and nervous strain. As I am engaged in work on the terminals, I get excited and irritated when I make mistakes or when my work is disturbed. Mental strain is quite heavy because I have to concentrate. (Other complaints: 1) The volume of work increases while the number of personnel is kept unchanged. 2) Work must be arranged so that plenty of time is provided for workers.) (Male in late 20s, regular, a public servant acting as a programming instructor)
 - 8) I get languish for friends. When I am concentrated on inputting and outputting of data, I feel so lonely. Long hours of VDT work makes me depressive mentally, which is no good. (Male
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- in late 20s, regular, a public servant engaged in epidemics)
- 9) I am afraid I might get mad. Back of my head is heavy all the time. I get nervous easily and feel that I may become mad. (Other complaints: 1) Many people complain that their hair is turning gray and become dandruffy. 2) My eyes get twitched.) (Male in early 30s, regular, a programmer and operator working at a newspaper agency)
 - 10) I have repeated evacuation of the bowels, and have some trouble in my stomach. I don't feel energetic, but always tired. When the work is very busy, I have diarrhoea easily. (Other complaints: 1) I feel my colleagues become more and more unfriendly, complaining only at the places of work, 2) When I gaze at the picture, letters become blurred. To avoid it, I blink often, which irritates my eyes. While gazing at the machine, more gum is collected than usual. I have to go and wash my eyes or have eye lotion applied all the time. If I go on working further, my eyes become bloodshot and I lose concentration. (Male in late 30s, a VDT operator in shift system in the data industry)
 - 11) Mental fatigue is serious as normal is set by the company. As money paid for the work done on word processors or personal computers is fixed for a page of typed manuscripts (normal for the work is very hard), it gives us tremendous mental strain and physical fatigue. If the VDT work is done in groups, some methods should be worked out to revitalize workers. (Male in late 20s, regular, an engineer in the manufacturing industry)
 - 12) Mental fatigue is the main thing. I get mentally tired because I am in hyper tension as the process of the work is unfamiliar to me. Unskilled workers get more nervous breakdown or disorder than others. (Other complaints: 1) Weakening of hearing capacity due to noise from printing, 2) Danger of eye strain and diseases, 3) Accumulation of fatigue resulted from long hours of work, 4) Pain around lower back, 5) Bad posture, etc.) (Male in early 40s, regular, a public servant engaged in the office work)
 - 13) Loss of vitality and positiveness. I have constant pain around my neck, which deprives me of perseverance. Sometimes, I get sick of every thing and emotionally weak. (Other complaint: 1) More paid holidays specially for those working on the machine and reduction of overtime work are imperative.) (Male in late 30s, a VDT operator in the printing and publishing industry, regular)
 - 14) Mental stress is great. I hate working on the word processor for long hours, because I feel as if I were drained out all the physical energy I have. I feel tired mentally rather than physically. At the same time, the VDT work has no opportunity for workers to display their creativity. (Male in early 20s, regular, a clerk in building office, data industry)
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- 15) No communication exists among workers — alienation of human beings. I have sick-headache once or twice a month, suffering from nausea all the time. I always feel pressed with the time, which makes me feel extremely tense with the feeling of chronic fatigue and irritation. The work at the visual display terminal always keeps me away from communication with my colleagues, every body being isolated from others. Those who want to be good at the work or catch up with others naturally want to learn from others, but with sharp strain. (Other complaints: 1) Fatigue in my eyes (pains and twitching), 2) Sometimes, headache, loss of appetite.) (Male in early 30s, regular, a public servant engaged in statistical study)
- 16) Loss of communication: Communication with the display terminal is the main thing, which lessens opportunities to communicate with other fellow workers. (Other complaints: 1) After long hours of work on the machine, I have sense of oppression around my eyes, forehead for about 2 days.) (Male in early 30s, regular, a programmer in shift system)
- 17) Work on the visual display terminal is tended to become a work for individuals, lessening the sense of solidarity with coworkers. (Other complaints: 1) I feel dizzy at bright light. My eyes are sore when I watch the moving animals in TV pictures. 2) I feel stiff around my shoulders, back, and worry about that I may have neck-shoulder-arm syndrome very soon. 3) I am also worried about the effect of radial rays.) (Male in late 30s, regular, a printing worker)
- 18) I have become autistic. (Other complaint: 1) My eyesight has drastically weakened probably from my work.) (Male in late 20s, regular, a public servant engaged in statistical study)
- 19) I don't feel like enjoying life with my family. I am always tired and don't feel like enjoying leisure time with family members. I am pressed by fatigue coming from job and family life, and worried about my health. (Other complaint: 1) After working on the terminals, I have pain in my eyes and at the side of my head.) (Male, a public servant)
- 20) I am afraid there will be a great many people suffering from nervous breakdown or disorder in the future. I get easily irritated, every thing looks blurred. (Male in early 30s, a public servant engaged in an office work)
- 21) I have buzzing in the ears for over a year. I had a consultation with the doctor in April 1984, but he didn't tell me the official name of my disease. (Male in late 30s, regular, a programmer in shift system in the manufacturing industry)
- 22) I have nervous strain which has been caused by physical strain resulted from the work. When I have time, I must do some physical exercise, I think. Every body has a limitation, so better no to work overtime. (Male, 19 years old, regular, in shift system, a VDT operator at a newspaper agency)

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- 23) I have nerve strain during my waiting time. (Male in early 30s, regular, an office worker in a transport company)
- 24) Patience is required for "debug" which is a part of the work to be done before working out program. It requires a great deal of patience and makes me really tired. Programming is very difficult, and I get nervous as soon as business order is given. (Male in early 30s, regular, a public servant engaged in an office work)
- 25) I have stomach disorder due to noise. Constant noise of the visual display terminal and printers keep me really tired, affecting unfavorably to my stomach. (Other complaints: 1) It is only several years since visual display units were introduced. They are being used without any basic tests or studies on the impact of the machine upon men and women, mentally and physically.
- 2) I am particularly worried about that men and women are being used as gunia pigs. 3) We are told that radioactive rays are leaking, 3) Letters on the display terminals are very small and in a single colour, which makes it difficult to distinguish one letter from another, giving nervous strain to us.) (Male in early 30s, regular, a public servant engaged in an office work)
- 26) When the machine gives poor response, I get irritated mentally. If average response rate is raised or the situation of TSO is indicated in some way, it would be easier to pre-estimate the response. (Other complaint: 1) Eyesight of those working on the terminals have been weakened almost unexceptionally. (Male in early 20s, regular, a programmer and SE)
- (Female)
- 1) I feel I'll go mad. Every body is in the state of new types of mental disorder. Physical fatigue is serious and unpleasant. When I get tired, I get easily irritated and feel like crying aloud. (Female in late 30s, regular, a public servant engaged in an office work)
- 2) I don't feel like chatting with other people, at all. I am always irritable and have lost concentration power. I don't feel like having good communication with other people. (Other complaint: 1) Sitting at the terminal makes my eyes twitched. My eyes are always filled with gum, which makes me irritable, too. (Female in late 30s, nonregular, a public servant engaged in a work in a medical office)
- 3) I am irritable always and at anything. When I was working on the conventional machine, I was settled and felt enjoyable, but not now. (Other complaint: 1) No good for eyes, When the work is finished, I think it's better do things that are completely different from the VDT work.) (Female, on office worker)
- 4) Communication exclusively with the machine is awful. When working at the machine for long

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hours, I become irritable and depressed. When the work for inputting is voluminous, I feel depressed mentally. (Other complaining: 1) My eyes get twitched after hours of gazing at the terminal and I have a headache, too.) (Female in late 20s, regular engaged in planning and office work)

5) Mental fatigue. I get mental fatigue, stiff neck and shoulders. I am worried about my stomach and other organs, and feel I might get older very soon. (Other complaints: 1) Stiff shoulders are almost unbearable. 2) I always keep my eyes shut.) (Female in early 40s, nonregular in night shift doing data and information service)

6) Human alienation due to isolation at shops. (Female in late 30s, regular, engaged in a work at TV office)

7) I feel pressed by the machine all the time. (Other complaint: 1) As the cord table is placed on the desk before the terminal, I keep looking at it, which keeps my posture very bad and my neck and shoulders stiff.) (Female in early 30s, regular engaged in work at a medical office)

8) I have lost power of concentration, particularly after hours of work at the VDT. I feel disgusted in working on the visual display units. (Female in early 20s, regular, an office clerk in a trade firm)

9) I have stiff neck and shoulders. After long hours of work on the machine, I get irritable, unpleasant and feel vomiting. (Other complaint: 1) I am told there are special glasses to protect eyes. They should be provided to VDT workers by the company.) (Female in early 40s, regular, a public servant engaged in an office work)

10) I have ringing in the ears. After I work on the machine for more than one hour consecutively, and input tiny figures on the machine, I feel my eyes blurred, painful and ringing in the ears. (Female in early 20s, regular engaged in an insurance company as a typist)

11) I have ringing in the ears and have pain in my eyes. I know my eyesight has weakened. (Female in late 30s, regular, a public servant engaged in a clerical work)

12) I get irritated very soon. When it takes too much time for figures or charts to be replaced with new ones, I get irritable and mentally exhausted. (Other complaints: 1) Most of those engaged in the VDT work have their eyesight weakened, 2) They are suffering from the advancement of short-sightedness and astigmatism, also. 3) Many have headache.) (Female in early 20s, regular, an accountant in a trade firm)

13) I get irritated and suffering from frequency of vomiting and dizziness. (Other complaints:

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1) Although I wear contact lens usually, it is difficult to fit the lens in dried eyes after long hours of the VDT work. So, I must wear ordinary glasses to work. 2) On my coming home, I realize my eyesight has weakened to a great extent.) (Female in late 30s, regular, a clerk in a trading firm)

14) I feel as if my chest were compressed after two to four hours of the VDT work, and vomiting sometimes. I wish I had enough time to adjust myself to the work, instead of being pressed by time all the time. (Other complaints: 1) After long hours of work, I feel physically pressed, besides fatigue in my eyes. 2) Very frequently, my eyes are too sore that I cannot keep my eyes open.) (Female in early 30s, regular, a clerk in a trading firm)

5. Complaints about the VDT machine, desk, chair, etc.

(Male)

1) Display board should be larger in size. As my chair is located about one meter away from the display terminal, I want it made larger in size. (Other complaints: 1) I was told by the doctor that my eyes would get dim with age in 3 to 4 years, but I have been suffering from astigmatism and long-sightedness since August last year. I have to wear glasses, too. 2) I don't feel like visiting the doctor's because a warning would be the only thing I would have from him. I know my eyesight is failing.) (Male in early 40s, regular in night shift, a public servant)

2) At the place of my work, workers' personality is being more and more disregarded. Quite naturally, workers who operate the VDT have different physical constitution. The machine, therefore, should be so arranged to meet with such differences, medically and structurally. The reverse is the case, however, Workers or operators have to adapt themselves to the machines which are standardized. The working place has thus become more and more disagreeable to those who work there. (Other complaints: 1) Little finger of my right hand and forearm get numbed frequently. 2) I have pains around the joint of my right shoulder, lower back and waist.) (Male in late 20s, regular, an office clerk in a medical office)

3) Working environment is no good. As the visual display terminal is placed in an ordinary office room, desks and chairs are not made specifically for that machine. They do not fit for the work. (Other complaints: 1) My eyesight is failing; my eyes get twitched and blurred and painful, too. I am entirely exhausted when I get home. Sometimes, I have no appetite and don't feel like eating at all. 2) My shoulders are stiff; I have a headache. The work on VDT makes me feel languid all the time.) (Male in early 40s, regular, a public servant engaged in clerical work in an insurance section)

4) The speed of telescripting should be speeded up. (Other complaint: 1) As I wear contact

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- lens, my eyeballs pain when the work goes on hours.) (Male in late 30s, regular, a technician)
- 5) I am not satisfied with soft and hard phases of the machine. As the VDT is set in a very small room, there are many troubles regarding spacing as well as lightening. We have a number of troubles, among which the most disagreeable is slow speed of the machine. (Other complaints: 1) I entertain serious apprehensions over reports of miscarriage or abnormal delivery among women working on the VDT.) (Male in late 30s, regular engaged in editing of books)
 - 6) Keyboards are named differently and have different functions by types of the machines, which disturbs the operators. (Other complaint: 1) My eyesight is failing.) (Male in early 40s, regular, a public servant engaged in office work)
 - 7) The machine is not made with respect for the standpoint of human engineering. Chairs should be adjusted to meet with the demands of the operators; casters should not move too much. (Other complaints: 1) I feel like vomiting after long hours of VDT work. Tears fall, too. 2) My eyes get painful, too. I have other physical troubles, also.) (Male in early 30s, regular, engaged in printing of code printing on computer-aided photocomposer.)
 - 8) Alphabet as well as Japanese letters should be arranged in a way suitable for console. (Other complaint: 1) My eyesight has weakened.) (Male, 19 years old, regular, a public servant doing a clerical work)
 - 9) It is desirable that Braun tubes are white, with letters in black. Keys should be arranged in the same way with the mortizing machine for cards. Noise of the printers should be eliminated. (Male in early 30s, regular, a clerk in a business company)
 - 10) I want the key board adjusted to my physical constitution. (Male, Ref. Mental Problems No. 3)
 - 11) My eyes get easily tired out due to strong reflection of the display board. (Male, Ref. Mental Problems No. 4)
 - 12) The height of chairs should be adjusted easily. Adjustment of the equipment should be made a duty of companies concerned by law or administrative orders. (Male, Ref. Mental Problems No. 5)
 - 13) VDT has many defects at the present stage. It should be developed to a machine which ensures easiness in reading and working without too much noise. (Male, Ref. Mental Problems No. 17)
 - 14) VDT should be improved so that it is adjustable to physical constitution of workers operating on it. Display board should be larger in size; "response" should be improved further to reduce

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waiting hours. If the machine is improved, it would eliminate nervous strain to a great extent. (Male, Ref. Mental Problems No. 25)

(Female)

- 1) Stools to support the operators' feet should be provided. They should be set at 5 to 10 cm above the floor. The machine is heavy; keyboard should be lighter and well balanced. (Other complaints: 1) Tears easily flow from my left eye 2) I have pain in my left hand even when I am doing household chores.) (Female in late 30s, a part-time key puncher in a wholesale company)
- 2) Working pressure is not regular in some types of the VDT. It should be improved to eliminate impacts upon hands. The colour of characters (letters) should be changed to one pleasant to eyes. (Other complaints: 1) My eyes get blurred easily, particularly on cloudy days, and get twitched very often. I have pains around shoulders and have a headache all the time. 2) I am afraid of shoulder-arm-neck syndrome that may hit me some day.) (Female in late 20s, regular, a programmer in a manufacturing company)
- 3) In composing sentences, letters, figures and marks that are used frequently can not be registered easily. Moves of cursor and printing and sometimes too slow, which gives me nervous strain. (Female in early 20s, regular, a clerk in a manufacturing company)
- 4) Change of visual displays is slow, which irritates me when I must work speedily to meet with customers' requirements. (Female in early 20s, a public servant engaged in a clerical work)
- 5) When it is cold, the reaction of the machine is slow, which takes much waiting time. The machine is too much standardized and lacks flexibility or adaptability in its movement. (Female in early 40s, a public servant working as a typist)
- 6) Display board should be set with some angle, rather than being kept vertical. Consideration should be given to the place for documents. Letters and figures should be made larger in size. (Other complaints: 1) As letters and figures are small, my eyes get tired. They get blurred and eyesight fails. 2) I have lost power of concentration, about which I am worried. (Female in early 30s, regular, engaged in work at a postal office)
- 7) Pitches of columns and letters should be widened. Frameworks for the page (of books) should be made larger, and so is the maximum size of letters. (Other complaints: 1) My eyes get so tired. 2) My contact lens get dried and unclear. 3) I have bloodshot eyes.) (Female in early 20s, regular engaged in an office work in a Government-monopoly enterprise)

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- 8) As the machine is set at a wrong place, it catches light from the outside, and it reflects directly into my eyes. It makes me difficult to read the manuscripts. (Female, Ref. Mental Problems No. 9)
- 9) The height of the machine could be adjusted easily to meet with constitutional demand of the worker concerned. The display board should be white, with letters in black or green. Keys should be lighter in weight. (Female, Ref. Mental Problems No. 13)
- 10) Change of displays should be faster and so is the speed of the printer. Sometimes, the machine does not fit rightly on the cabinet or the desk. (Female, Ref. Mental Problems No. 14)

CHAPTER IX

SUMMARY OF THE REPORT AND TASKS FOR TRADE UNIONS

A rapid metamorphosis is observed in the working environment and the nature of jobs while technical innovations stimulated by microelectronic technologies are under way. Thus a large number of traditional jobs have been replaced by VDT work. Then, what on earth does it mean to VDT work? We tried in our study to highlight the reality of this question focusing our primary attention upon the essential factors of labor in terms of "working environments as well as workers' health and safety". As has been from time to time referred to them in the previous Chapters, a number of factors of great importance have been testified. Let us again touch up the whole picture of the Report briefly.

First, our analysis have been made in the major items concerning working place, working conditions and the state of workers' health according to each age bracket of them. In concert with the aims of this study, a question was asked to ascertain whom workers tend to consult with or seek the advice of when they wish to better their conditions or environments. The results of the study are indicated in the Chart No. 9. As far as the items referring to the working environments, chronic fatigue and myopic development are concerned, the strongest complaints about

their deteriorated working conditions are found among younger employees at their twenties. Thus the proportion of workers who think of their possibility to quit VDT job represents the highest for the part of this age bracket in comparison with other age groups. As to whom these young employees seek for, then, the advice with respect to their problems on the working place, the Chart indicates that "the colleagues on the same working place" comes first (more or less 45%) and "their superior or boss" comes next (around 40%) and their trade union wins little sight of them. When we consider the fact that this questionnaire has been issued by the union toward its members, we have to see through the reality being cleared by this study. At any rate, when we deal with the problems concerning VDT work, we have no other way to tackle the challenge than starting our steps based on this fact of stark reality.

Let us scrutinize the same fact from another angle. Under the classified groups of sex as well as types of job, the Table 1 shows the worst and the second worst job categories where workers are placed under the poorest conditions of work and environment unfavorable for their health. Above all, the two worst categories are found mostly among the female groups at VDT shops and an obvious difference in their working conditions is also found between two sexes. Particularly, the group of job for "Designing and Drawing, female" is badly behind. Then come in sequence the groups of "Word processing, female", "Dialogue, female", "Data entry, Female", and "Monitoring, female". In

fact, the groups of female employees are obliged to be exposed to the worst conditions. (See Table 9-1)

Table 9-1
The Worst and the Second Worst Job Groups Classified by Sex Exposed to the Poorest Conditions of Work and Environment Expressed in their Complaints

Noted complaints	The worst no. 1	The worst no. 2
Working time for a continuity of operation is too long	Designing/ Drawing(CAD)(F)	Word processing (F)
Working time for a continuity of operation a day is too long	Designing/ Drawing(CAD)(F)	Dialogue (F)
Cannot take a break	Data entry (F)	Word processing (F)
Maximum working time for a continuity of operation is too long	Designing/ Drawing(CAD)(M)	Monitoring (M)
Working norm imposed	Designing/ Drawing(CAD)(F)	Data entry (F)
Wishes to quit VDT work	Designing/ Drawing(CAD)(F)	Data entry (F)
Symptoms of eye disease	Designing/ Drawing(CAD)(F)	Word processing (F)
Affected by myopia	Monitoring (F)	Dialogue (F)
Symptoms of physical disorder	Designing/ Drawing(CAD)(F)	Dialogue (F)

Note: (F): female, (M): male

As to whom these female groups look forward to an advice about the problems found on their working place, they tend to choose firstly their colleagues on the same working site and

fact, the groups of female employees are obliged to be exposed to then they approach their superior or boss in the same undertaking with little regard to their trade union. Among others, the female group of "Designing/Drwaing(CAD)" being placed in the worst conditions never come to their trade union for its advisory services. As to the cases of the groups of male workers, they are quite similar to it, though there is a little difference.

What is more important in this context is the fact that there is always one for five or six employees in each group replied in the same manner as he/she has nobody to seek advice. As has been pointed out in Chapter IIII, the VDT job is an isolated function vis-à-vis a machine. The systems behind the machine strongly control the individual employees. According to the records of the hearing survey from individual employees made as an integral part of this study, it was also concluded that no matter how they fail to adapt themselves to computerizing processes or show superfluously high adaptability to them, they tend to miss every chance for human dialogue. The fact that we find such a great number of employees who have actually nobody whom they can consult with about their problems of working environments seems to be partly reflecting the very feature held by VDT workers. (See Chart No. 9-2)

These are the realities of workers and working place conditions seen around the union. What should the union do in the world in this situation?

When we review the results of this study from the view point for securing the foundation of trade union influence over the working places where VDT work predominates, we find a set of implications of great importance. Firstly, the questions concerning the work at VDT necessitate a careful scrutiny into individual problems from case to case of sufferings should be thoroughly understood by the union.

Taking an example of mental strains that has been dealt with in Chapter IIII, the case of depression originates from the frictions between the factors, on the one hand, such as the mental space of domination of individual workers, their life experiences and their personal sensitivity and, on the other, an inhuman system of production. Their subjective symptoms mark very distinct individuality. Even in the same group of similar symptoms, there found as much difference in their strains as the individual mental domains vary. At the same time, the way of remedy must attach importance to the individual solution of their problems not by means of a uniformed measures which would be only appropriate for collective solution of the common ones.

The more today's labor intensifies the need for mental aspect of ability, the more the nature of professional diseases become individual. Nowadays, it is getting more and more hard to identify a sequence of cause and effect of professional diseases or ruination of the state of health of the employees working at VDT compared with the cases of traditional industries such as

When we review the results of this study from the view construction industry where a fracture of bones is often involved due to a fall or as engineering industry where a cutting in the fingers is sometimes involved. Since the situation is like this, and suppose the situation proceeds intact at its present pace, it would encourage the tendency to find a boundless number of professional diseases without any official recognition.

The loads coming from the work at VDT over employees not only take the form of mental strains for them but also very greatly according to the factors of types of task, sex, age, length of service experienced, working environments, conditions of employment and organization of working process. It may be right to argue that they would vary from person to person entirely depending upon his/her own conditions (mental and physical) for coping with the work.

It seems that the working people for whom the trade union proceeded its activities so far have been imaged, rather, collectively and grasped and treated to that extent. The question of the work at VDT, however, could never be solved and we can not even tackle the problematic situations, it also seems, if we have not anything like a new methodology to review the movement on the basis of a fresh approach to the questions raised at the level of individual workers.

Then what are the grounds of it? As it is very clear

The second problem originates from the fact that the in the cases of mental strains witnessed in Chapter III, the working sector on computers compels men to give up their individuality of human aspect (e.g. sensitivity, personal mentality and motivations, etc.) as unreasonable elements for the mechanical process and forces them to be integrated into the computer systems. In other words, the computer systems (a crystallization of the capitalist will putting the highest priority on the industrial merits and less costs) drive the working people of the whole independency of their job and working life and tend to put them into their own matrix. It is considered that an extreme tension or resistive behaviors against this, either being conscious or unconscious of it, is the direct cause of what we call mental strains or various sorts of alienation. Therefore, so as to remove these causes of malign effects and see to it that the sound conditions be recovered, there is no other way than to establish an order of autonomy in working manners (working rhythm, working environments and processes fitting to his/her own biological conditions) well based on the autonomous way of leading life which should never be abused by the factors related to worker's duty. The genuine nature of this autonomy should consist of the life and existence themselves of each and every worker which must be individually outstanding. For establishing this autonomy in worker's life and his/her work in this sense, what could be done by the union? That is the question now we are asked.

The second problem originates from the fact that the work at VDT holds unprecedented nature of contents and forms of labor. As has been pointed out in Chapter I, the major part of this novel type of work is done by the young workers at their twenties. In addition, the rapidity of changes found not only in the process of shifting the traditional labor into the work at VDT, but also in the mechanical innovations, model changeover and software development for the VDT devices is really enormous. The young employees having little experienced in the traditional labor and being less familiarized themselves with the trade unionism tend to be poor for appraising the real value of their own work comparing with others even though their actual work at VDT is harsh and their working conditions are much deteriorated. As has been mentioned already, approximately 80% of employees who complain about the deteriorated working conditions or environments seek the advice of "their colleagues at the same working place" or "the superior or boss in the company" which could eventually be led to a solution at the personal base. As long as the complaints are dealt with between the employees concerned and their superiors or bosses or their colleagues at the working place, the process for solution of the question, in nine cases out of ten, assumes a temporary or specific nature and no improvement could be identified as an established right for the employees in general. On such a soil, no perspective for exchanging information for real solution of the common problems could grow up over the boundaries of working places or companies.

As has been also touched upon in the preceding parag-

consultation between labor and management is realized. In paragraphs, it is the task of union to organize a movement sticking to the view point to respect the individuality involved in the problems and not deal with the claims of union members in a blindly uniform manner and try to find a confirmed solution of the problem in order to pave the way for establishing a new right for these employees. What we must pay attention to is the fact that the differences in the levels of working conditions and the quality of labor management among companies are widely seen since the patterns of working process are so quickly changing. Therefore, the role to be played by the union catering for the employees working at VDT is found in the function to check closely, in

a wider sense, the working process through intensified activities to better the conditions of work at VDT and put the subjects concerning the dimension of work and personnel deployment under the union's constraint.

Two essential points in this connection are:

Before everything, it should not be allowed that the data related to the personal merits and achievements in work are utilized for endorsing the management system based on the control over the ability of individual workers. This is the right for workers and employees to secure their privacy. Since the times start to depend upon the mental ability of working people, a new right for workers to defend their privacy is in immediate need.

It is also necessary to have a new order where a prior

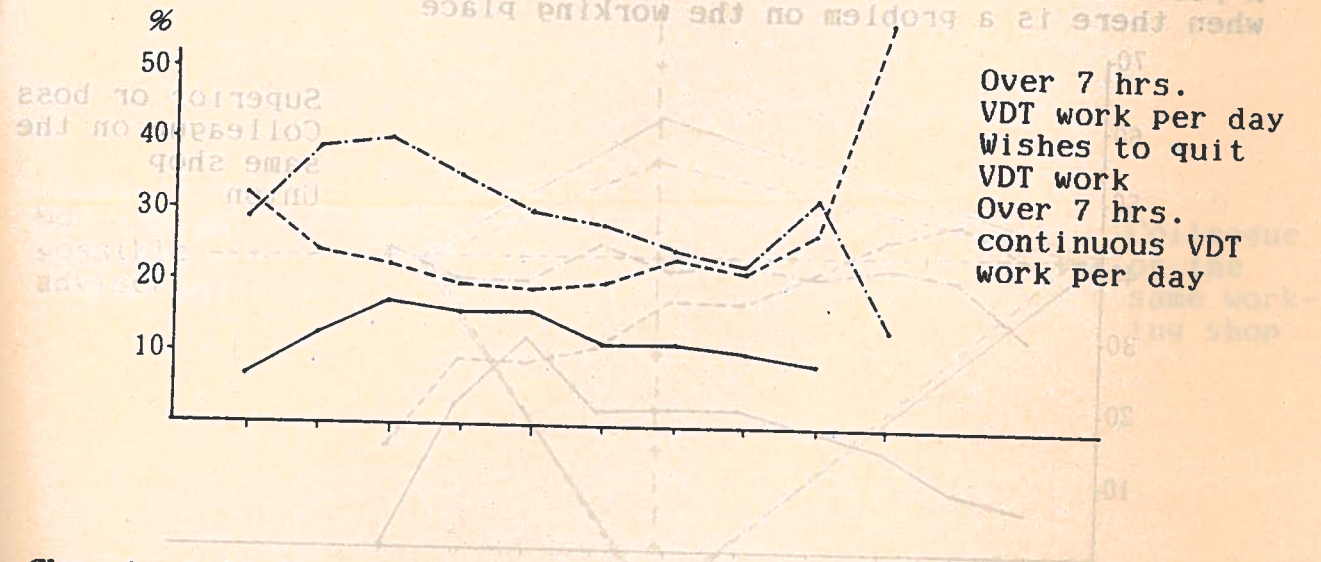
consultation between labor and management is realized to tackle the questions to be raised when changes in the working conditions or working places are foreseen. To fulfil this aim, the union should be ready to present its own counterplan in the matters of labor, working lots, undertakings and the industries. For the present, SOHYO has formulated a "Guideline for the purposes of checking labor at VDT" on the foundation of the study conducted this time. It is imperative that we utilize it as a base for stimulating the movement and encourage the initiative of workers to draw up their own draft of programme for checking labor at VDT so as to achieve improvements in the conditions of working place.

In conclusion, SOHYO is firmly determined to start its active motion toward fuller solution of various problems concerning labor at VDT through effective utilization of the results of these researches conducted so far.

Chart No. 9-1

Problems on the Working Place and a Possible Adviser

Problems at the working place:



Chronic fatigue, stiffness in the right shoulder and myopic symptoms

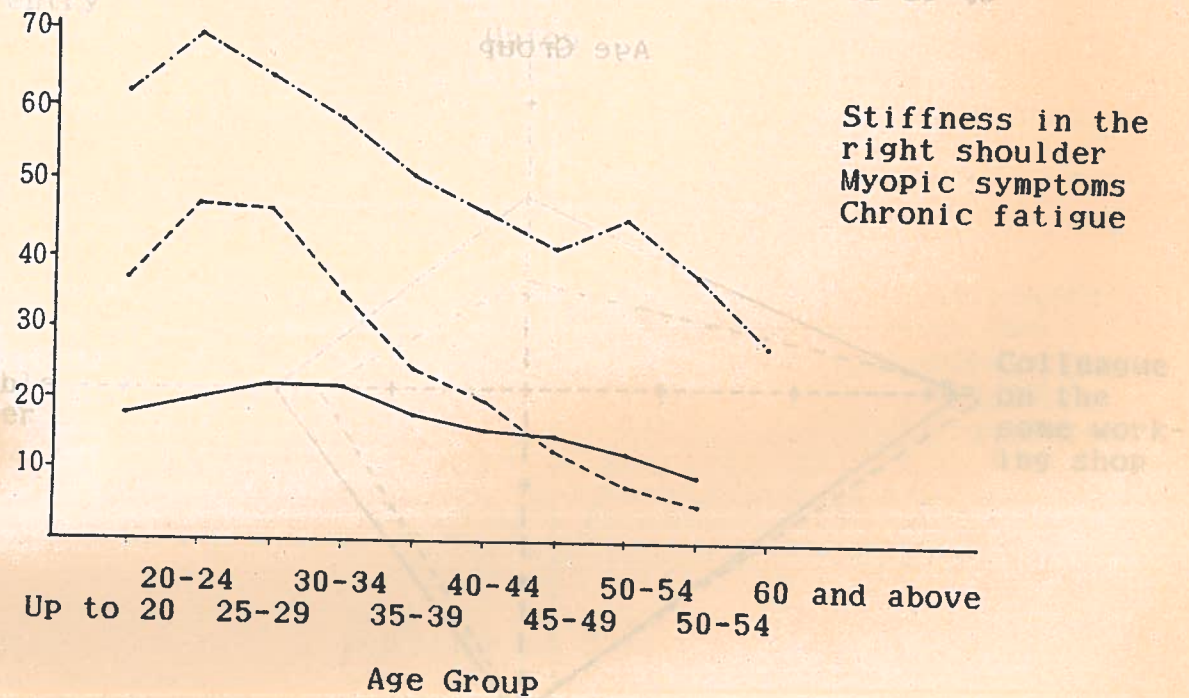


Chart No. 9-1 (Cont'd.)

Problems on the Working Place and a Possible Adviser

A possible adviser whom the worker seek for an advice when there is a problem on the working place

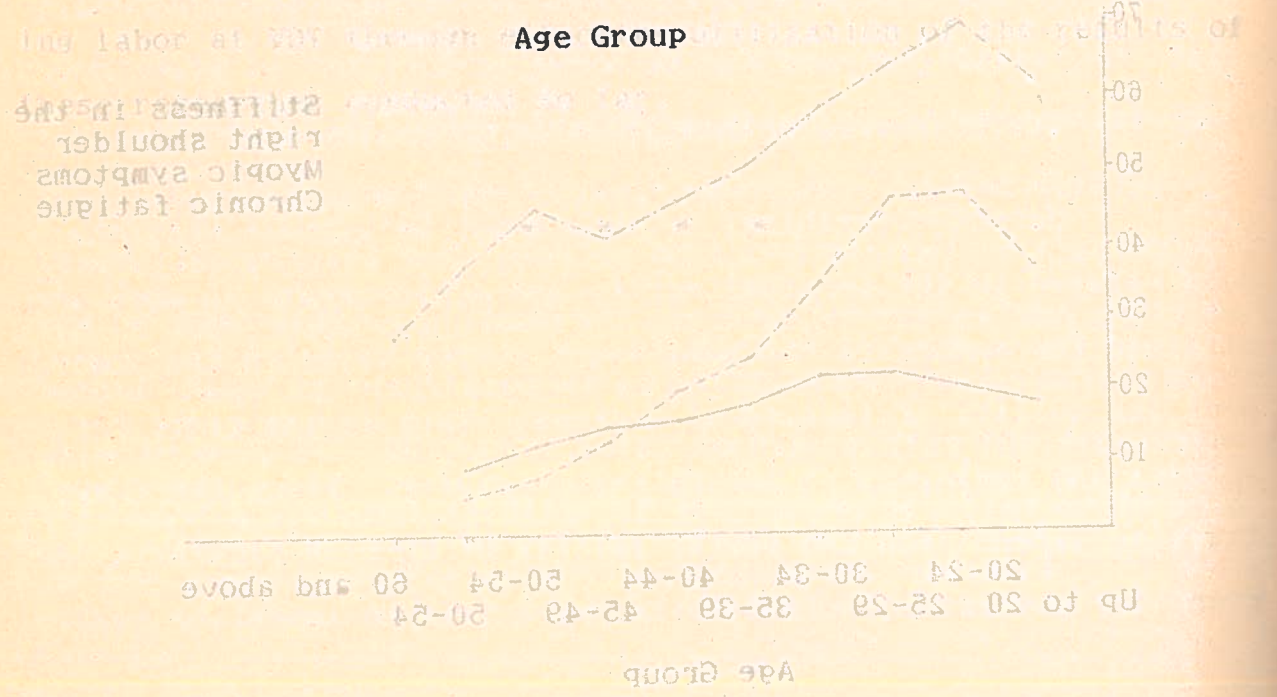
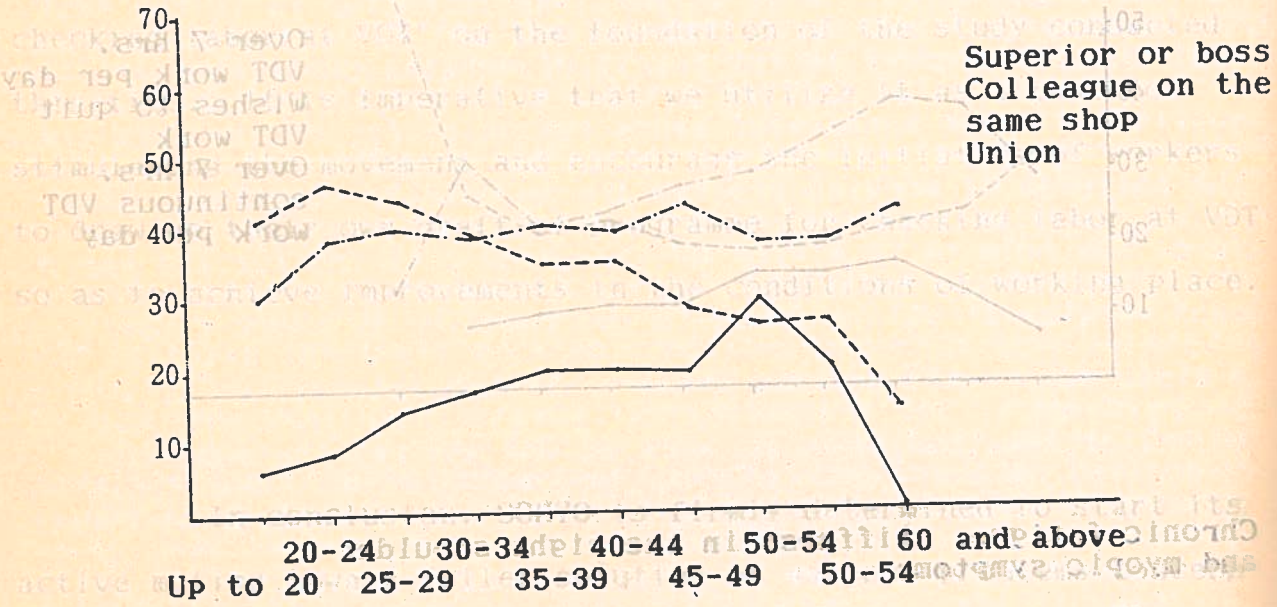


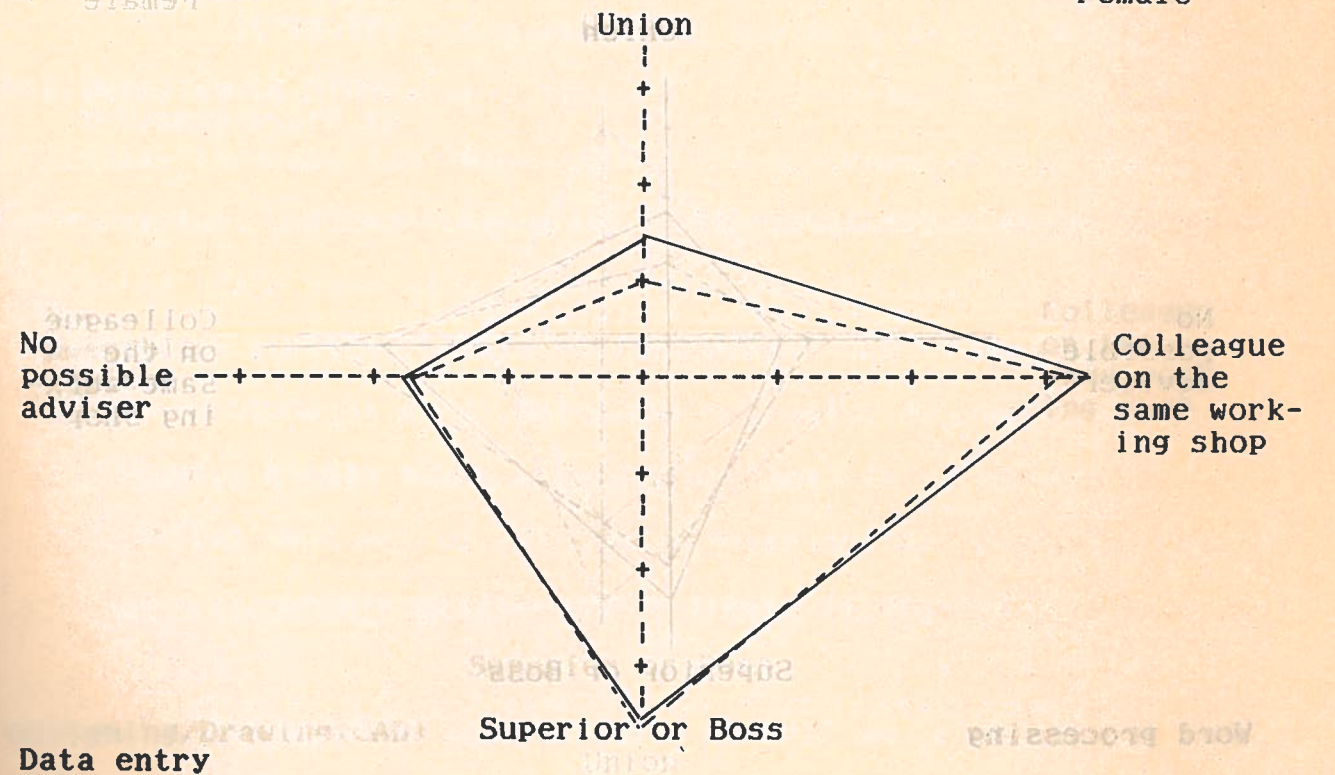
Chart No. 9-2-(1)

A possible Adviser for the Worker Classified by His/Her Job

Dialogue

— Male
- - - Female

— Male
- - - Female



Data entry

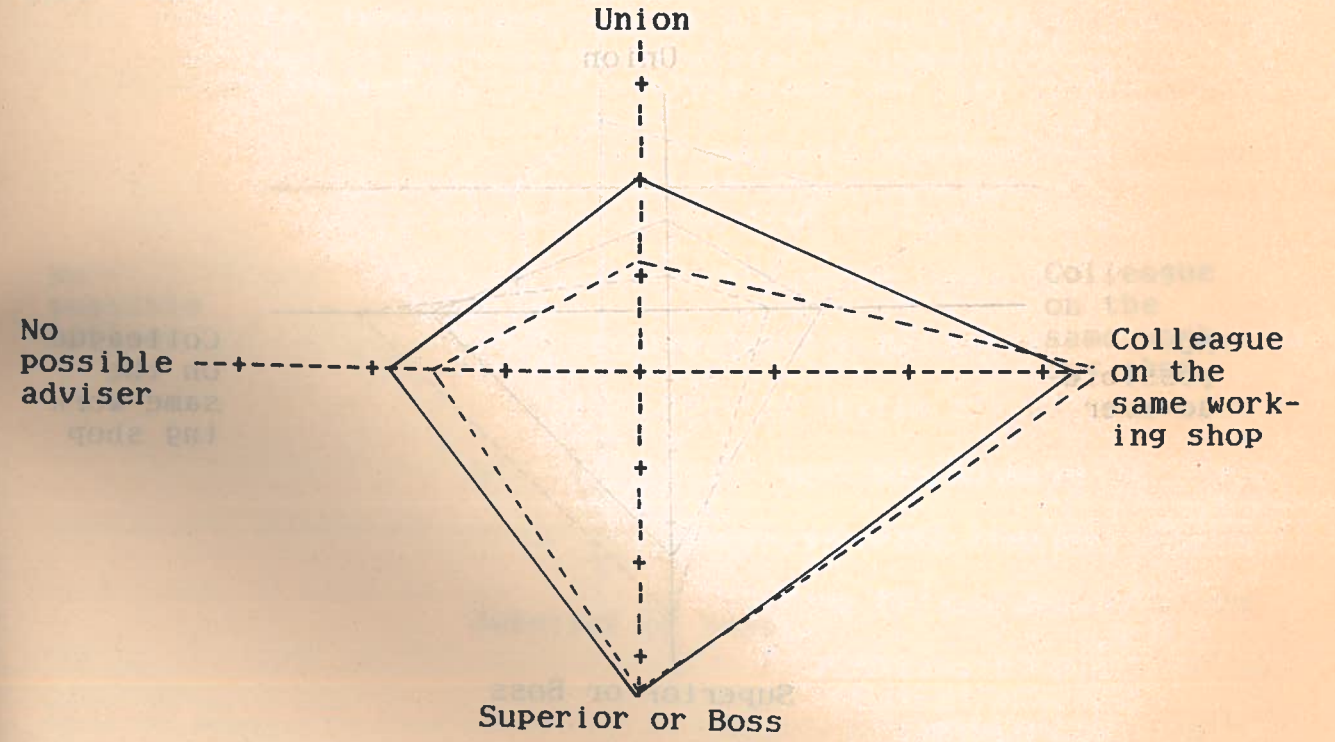
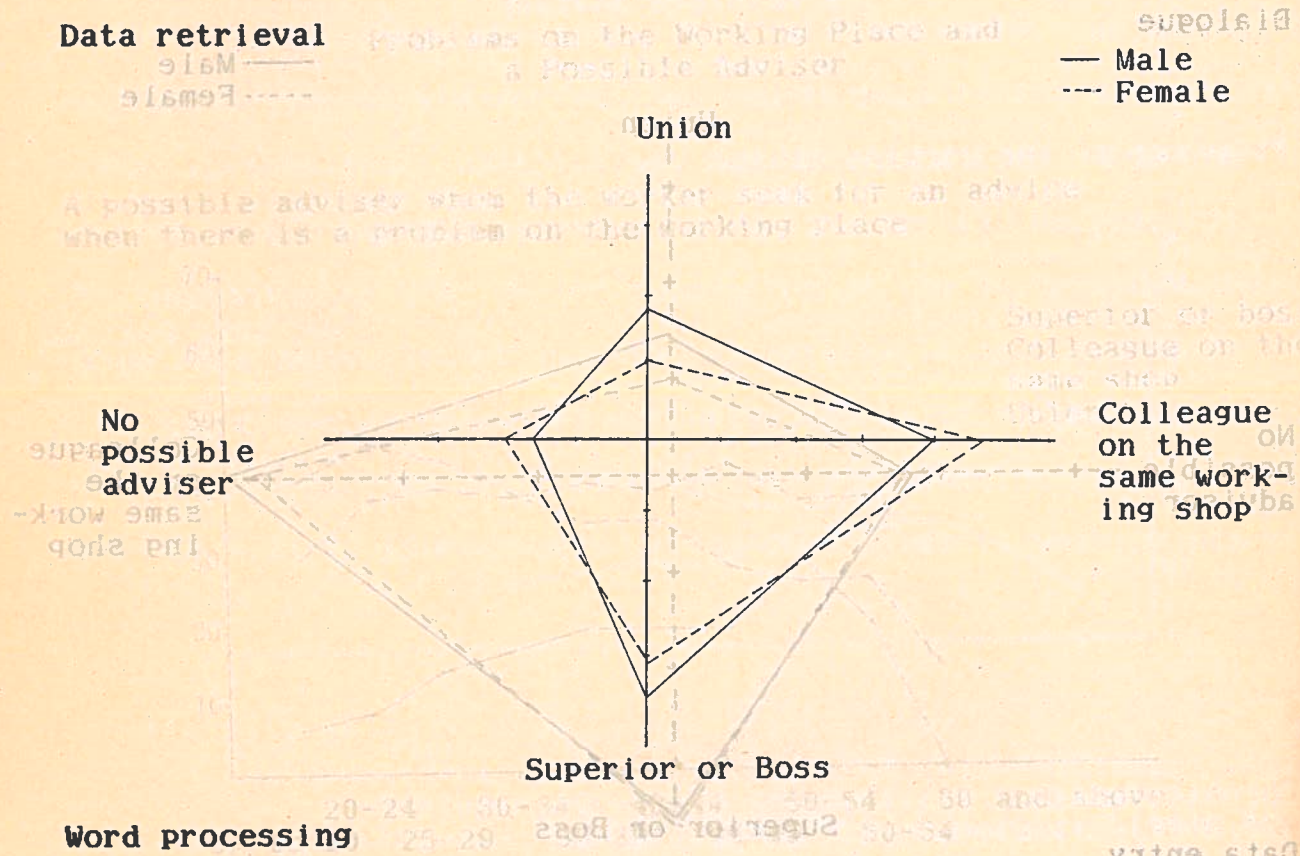


Chart No. 9-2-(2)

A possible Adviser for the Worker Classified by His/Her Job

Data retrieval



Word processing

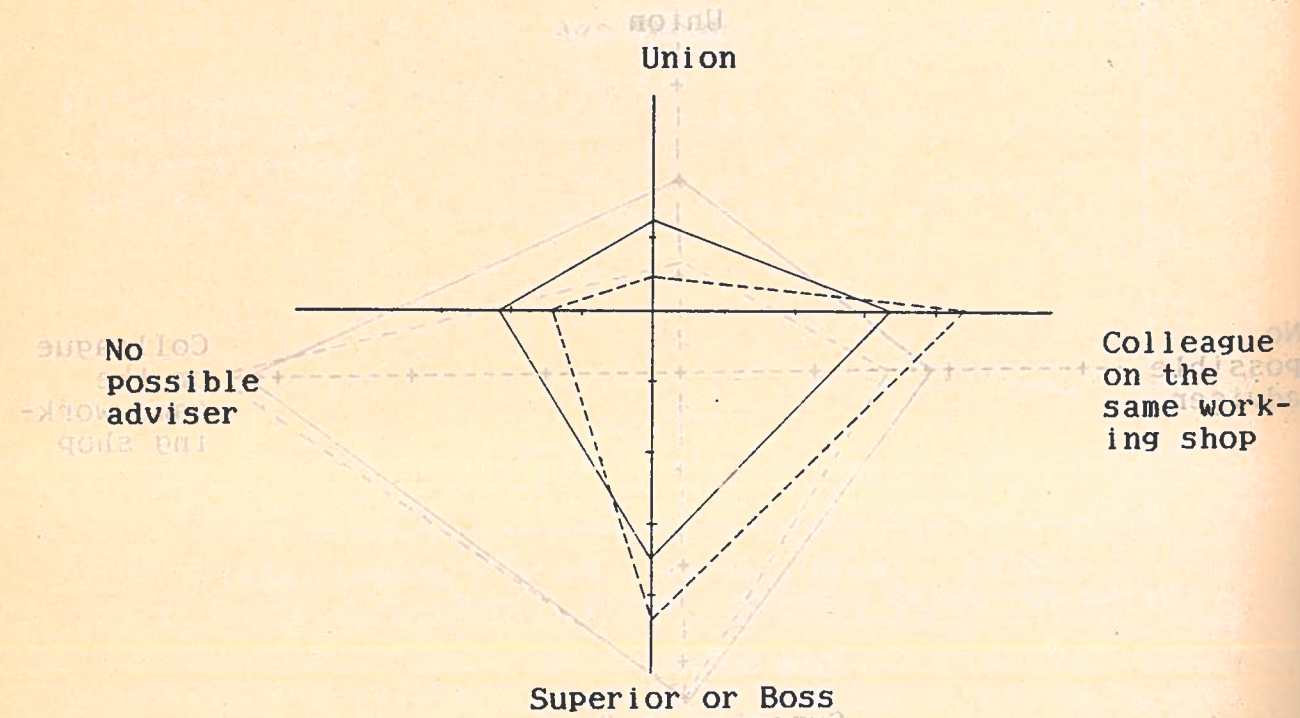
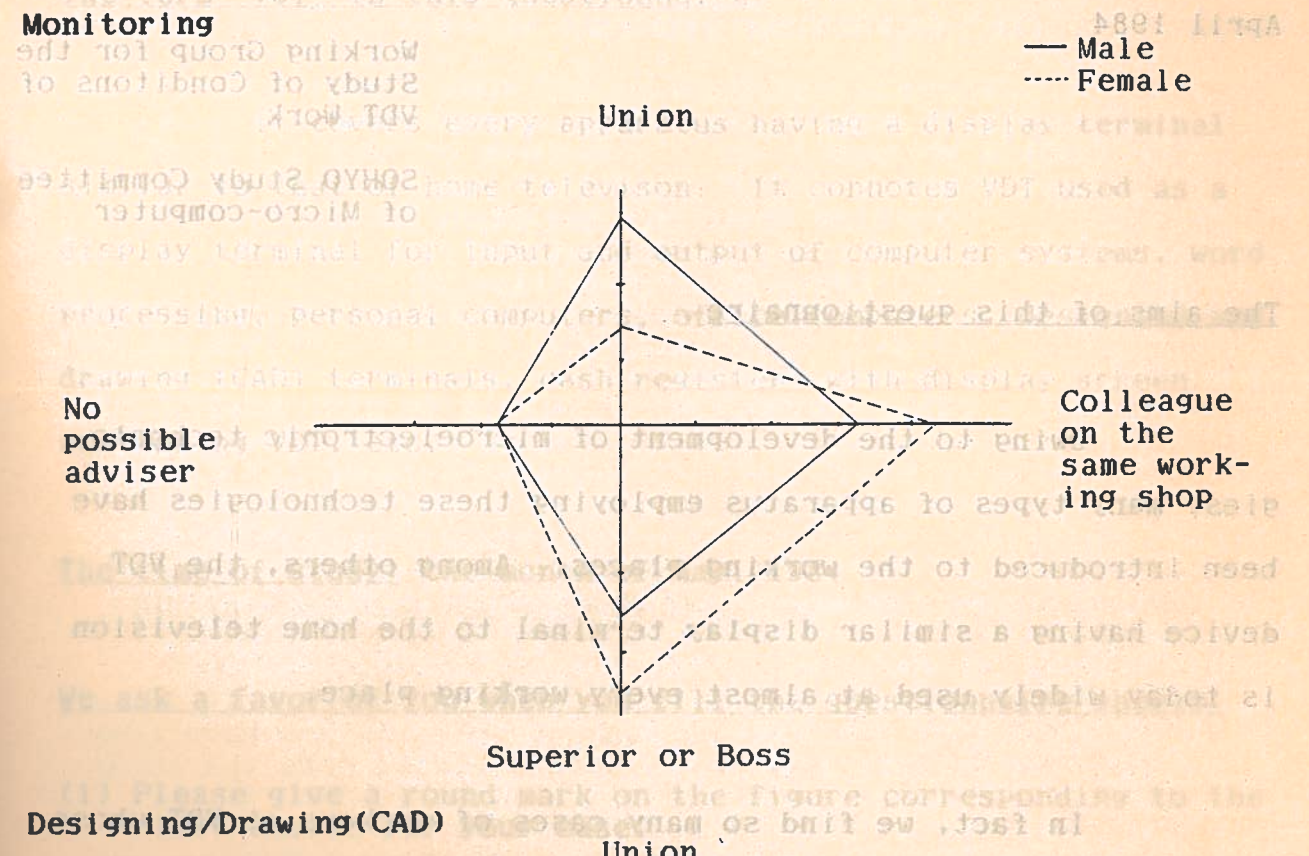


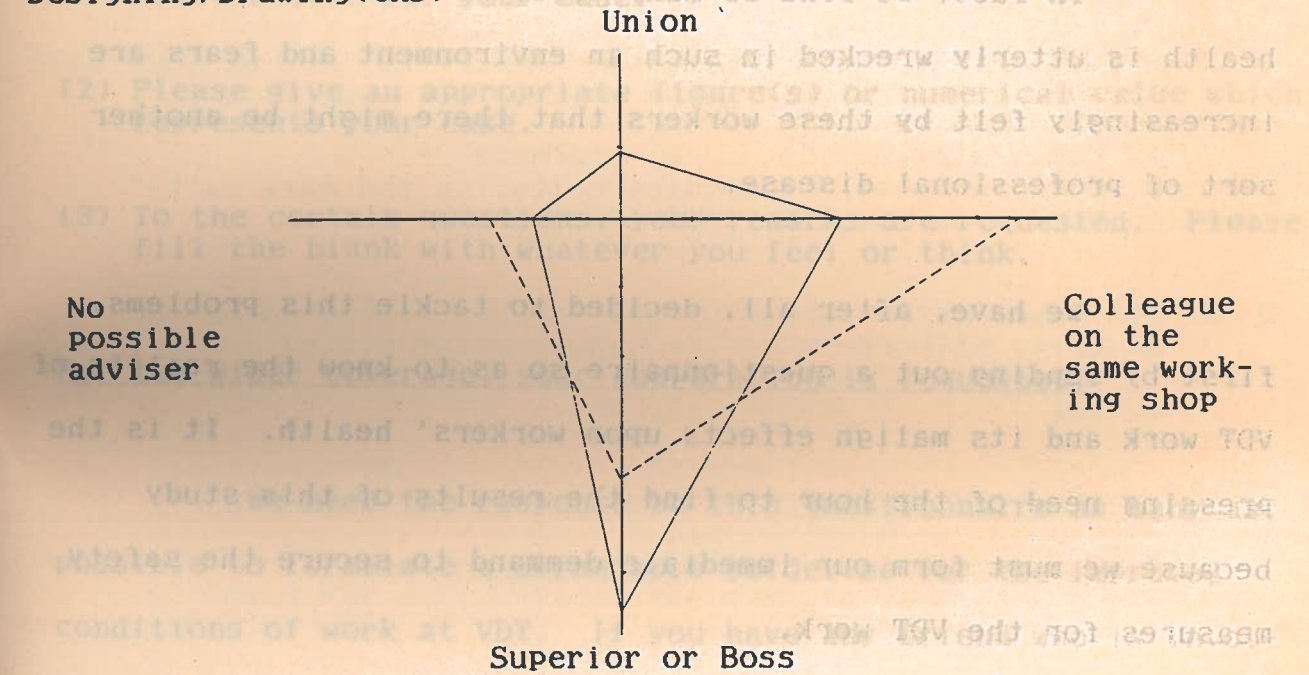
Chart No. 9-2-(3)

A possible Adviser for the Worker Classified by His/Her Job

Monitoring



Designing/Drawing(CAD)



Appendix

Questionnaire on VDT Workers' Health and Safety

April 1984

Working Group for the Study of Conditions of VDT Work

SOHYO Study Committee of Micro-computer

The aims of this questionnaire

Owing to the development of microelectronic technologies, many types of apparatus employing these technologies have been introduced to the working places. Among others, the VDT device having a similar display terminal to the home television is today widely used at almost every working place.

In fact, we find so many cases of workers at VDT whose health is utterly wrecked in such an environment and fears are increasingly felt by these workers that there might be another sort of professional disease.

We have, after all, decided to tackle this problems, first by sending out a questionnaire so as to know the reality of VDT work and its malign effects upon workers' health. It is the pressing need of the hour to find the results of this study because we must form our immediate demand to secure the safety measures for the VDT work.

We hope the workers actually work at VDT will be good

and active enough to cooperate with us to achieve this study.

The term "VDT" in this questionnaire:

It covers every apparatus having a display terminal similar to that of home television. It connotes VDT used as a display terminal for input and output of computer systems, word processing, personal computers, office computers, designing and drawing (CAD) terminals, cash registers with display screen, monitoring VDT, etc.

The time of study: the month of May, 1984

We ask a favor of you when you fill the questionnaire sheets:

- (1) Please give a round mark on the figure corresponding to the right answer for your case.
- (2) Please give an appropriate figure(s) or numerical value which represents your case.
- (3) To the certain questions, your remarks are requested. Please fill the blank with whatever you feel or think.

For the wider coverage, your cooperation is requested.

We need the response to this questionnaire as many as possible to formulate a dependable guideline for the improved conditions of work at VDT. If you have any friend who is involved in the work at VDT and interested in replying to our questionnaire, please let us know. We can send him/her our question-

and active enough to cooperate with us to achieve this study.
 naire sheets. If you have any question about this project or
 questionnaire itself, please write to or call office of our
 Group. You can reply on our secrecy.

Working Group for the Study of
 Conditions of Work at VDT
 c/o SOHYO Study Committee of
 Micro-Computer
 3-2-1, Kanda Surugadai,
 Chiyoda-Ku, Tokyo
 Tel: 03-251-0311

* * * * *

Questionnaire Concerning the Reality of Your Work at VDT:

- Q 1: How long have you been working at VDT? (If you have been employed by more than one company, please note the total periods of work at VDT)
- Q 2: Within which category mentioned under the type of your work at VDT falls? Give a round mark on only one figure.
- | | |
|---|---------------|
| 1. Data entry | 2. Dialogue |
| 3. Data retrieval (including collation and data call) | |
| 4. Word processing | 5. Monitoring |
- Q 3: The function performed by you is also exercised by the majority of workers on the same working place?
- | | |
|--------|-------|
| 1. Yes | 2. No |
|--------|-------|
- Q 4: (1) Is your VDT only for your use or for common use?
- | | |
|---------------|-------------------|
| 1. For my use | 2. For common use |
|---------------|-------------------|
- (2) In case it is for common use, how many workers use the same beside you?

- | | | | | |
|----------|---------------------------|------|------|------|
| 1. 1 | 2. 2 | 3. 3 | 4. 4 | 5. 5 |
| 6. 6 - 7 | 7. More than 10 inclusive | | | |

- Q 5: How long you work an average day at VDT?
- | | |
|--------------------------|--------------------------------|
| 1. Less than 1 hour | 2. 1 - 2 hours |
| 3. 1 - 1 hour 30 minutes | 4. 1 hour 30 minutes - 2 hours |
| 5. 2 - 2 hour 30 minutes | 6. 2 hour 30 minutes - 3 hours |
| 7. 3 - 4 hours | 8. 4 - 5 hours |
| 9. More than 5 hours | |

- Q 6: How long does your operation usually last in one continuity of work?
- | | |
|---------------------------|---------------------------------|
| 1. Less than 30 minutes | 2. 30 minutes - 1 hour |
| 3. 1 - 1 hour 30 minutes | 4. 1 hour 30 minutes - 2 hours |
| 5. 2 - 2 hours 30 minutes | 6. 2 hours 30 minutes - 3 hours |
| 7. 3 - 4 hpours | 8. 4 - 5 hours |
| 9. More than 5 hours | |

(Note: In this question, one continuity of work means a spell of the duty hours between the breaks. A brief leave for business purpose or the time in bathroom is counted for duty time.)

- Q 7: (1) Reflecting on your experiences in the past, the peak of your work at VDT would come in which periods listed under? Give a round mark on the figure according to the order starting from the yearly span to the daily one.

- In a year
- | | | |
|-------------|----------------------|--------------|
| 1. January | 2. February | 3. March |
| 4. April | 5. May | 6. June |
| 7. July | 8. August | 9. September |
| 10. October | 11. November | 12. December |
| 13. No peak | 14. Not particularly | |

- In a month
- | |
|----------------------------|
| 1. Within first 10 days |
| 2. Within second 10 days |
| 3. Toward the end of month |
| 4. Not particularly |

- In a week
- | |
|---------------------|
| 1. At the beginning |
| 2. Toward the end |
| 3. Not particularly |

- In a day
- | |
|---------------------|
| 1. In the morning |
| 2. In the afternoon |
| 3. In the evening |
| 4. Not particularly |

- Q 7: (2) In case the peak does not come in the form defined above, in what form it takes to come? Please mention it concretely?

Q 8: This question is asked if you have answered that the peak would come in a definite month in a year. Please indicate how much the volume of work would be increased in terms of percentage compared to the average month in 100?

1. 10 % 2. 20 % 3. 30 % 4. 40 % 5. 50 %
6. 60 - 100 % 7. More than 100 %

Q 9: Through your experience in the past, how many hours did you work at VDT in one continuity as the longest operation?

About hours continuously.

Q 10: (1) After one continuity of work, can you take your break?

1. Yes, mostly 2. Yes, sometimes 3. No

Q 10: (2) The question is again if you mentioned "Yes, mostly" to the foregoing question. How long can you take your break?

About minutes.

Q 11: When you work at VDT, how long do you look in the display terminal in percentage approximately again the total time of work in 100?

Q 12: Do you have any assigned norm (volume of work that should be achieved)?

1. Yes 2. No

Q 13: Have you ever had an idea to quit the job at VDT?

1. Yes 2. No

Q 14: (1) Do you have any other duty beside the work at VDT

1. Yes 2. No

Q 14: (2) If yes, in Q-14(1), what kind of duty you have to discharge?

1. Clerical work in general
2. Reception of incoming people or guests
3. Collation of output vouchers
4. Research or study
5. Checking up in products
6. Manufacturing work
7. Others (Please mention it in detail....)

Q 15: (1) For your work at VDT, have you ever been trained or educated?

1. Yes 2. No

Q 15: (2) If you answered "Yes" in Q-15(1), was it satisfactory for you?

1. It was satisfactory 2. It was not satisfactory

Q 16: When you feel like improving the conditions of work at VDT, whom you wish to consult about it?

1. Trade Union 2. Colleague(s) on the working place
3. Friends 4. Superior or boss in the company
5. Committee of Industrial Safety and Hygiene
6. Medical services 7. Others (Please, in detail)

Question concerning the Working Environments of Your Work at VDT

Q 17: Where is your VDT set?

1. In the same room so far used on the office table
2. In the same room so far used at a new specific corner for the set of VDT
3. A room for an exclusive use of VDT(s) in set up

Q 18: How about the visibility of VDT when you look it in?

1. Visible easy 2. Not so well visible

Q 19: About lighting conditions when the work at VDT is performed, give a round mark on the figure which corresponds to the case of years.

- (1) About the room lighting:
1. Too bright 2. Appropriate 3. Too dark

(2) About the lighting at handy distance:

1. Too bright
2. Appropriate
3. Too dark

(3) About task lighting:

1. Too bright
2. Appropriate
3. Too dark

Q 20: (1) Do you find sometimes in your room of work at VDT glare, reflections or flickerings which disturb your work there?

1. Yes
2. No

Q 20: (2) If you answered "Yes" in the foregoing question, what is the reason for that? Put a round mark on the figure(s) as many you think appropriate.

1. The light comes in through the window
2. The lighting source reflects on the display screen
3. Reflections of lighting coming from walls or curtains
4. The letters in the screen flicker due to the imperfect conditions of the machines or unstable power
5. Others (Please, in detail)

Q 21: How about the noise originating from air-conditioning or other VDT facilities (inputting sounds and printer noise)?

1. Very noisy
2. Noisy
3. Caring not much

Q 22: About the air-conditioning, give a round mark whichever you think appropriate.

1. Too dry
2. Too humidity
3. Smelling
4. Tobacco smoke
5. Dusty
6. Unpleasant draft
7. Too much cooling
8. Ineffective cooling
9. Too much heating
10. Ineffective heating
11. Unpleasant heat from equipment
12. No particular problem

Q 23: How about room space in conjunction with the number of workers?

1. Too crowded
2. Just appropriate
3. Too few

Question About Your VDT Apparatus and the Ergonomic Conditions of Your Working Environment

Q 24: The surface space on your desk or table is:

1. Enough spacious
2. Not enough spacious

Q 25: Is the height of your desk or table adjustable?

1. Yes
2. No

Q 26: Is the height of your seat adjustable?

1. Yes
2. No

Q 27: How about the manageability of your VDT?

1. Yes
2. No

Q 28: What part or point do you want to improve the VDT now at your disposal? Give a round mark what ever you find necessary.

1. Operational pressure for the keys
2. Arranging order of the keys
3. Color of the letters
4. Letter size
5. Line space
6. Luminosity of letters
7. Dimension of the screen
8. Flickerings of letters
9. Brightness of the letters
10. Supporting table of the arms
11. Space for the manuscripts to be placed on
12. Others ()

Q 29: Please write freely whatever you think about shortcomings or demerits found in the VDT you use and the seat for your use.

Q 30: Please not the name of your VDT manufacturer:

Manufacturer: _____ Model: _____

Q 31: Do you think, at your working place where the VDT has been introduced, there is a trend to force female workers for doing the work at VDT?

1. Yes
2. Not necessarily

Questions about Your Physical Conditions

Q 32: How much are you fatigued with the present work? Give a round mark on one figure only.

1. Not particularly
2. For a while after the work
3. Fatigue remains up to the time to go to bed
4. Fatigue remains after getting up
5. Always fatigued

Q 33: About the recent conditions of your eyes, do you think any one of them falls under the description in the following list? Please give a mark on figure either 1(Yes) or 2(No) (of the eyes, in the eyes...).

	Yes	No
1. Feeling fatigue:	1	2
2. Feeling heavy:	1	2
3. Feeling pressed:	1	2
4. Hard to keep open:	1	2
5. Pleasant when they are lightly pressed:	1	2
6. Pains in the deepest part:	1	2
7. Feeling flickering things:	1	2
8. Vision flurred:	1	2
9. Out of focus:	1	2
10. Feeling dazzled:	1	2
11. Sight becomes vague after gazing at things:	1	2
12. Tears coming out:	1	2
13. Seeing stars:	1	2
14. Red eyes:	1	2
15. Eyelids tremble:	1	2
16. Gum comes out:	1	2
17. Can not tell one color from another:	1	2
18. Afterimage remains:	1	2
19. Feeling flashes in eyes closed:	1	2
20. White walls look in defferent color:	1	2
21. Color remains in eyes closed:	1	2

Q 34: During the year passed over, how has been your eyesight (after medical or optical check)?

1. No idea
2. Found a myopic symptom or it developed
3. Found a hyperopic symptom or it developed
4. Found a presbyopic symptom or it developed
5. Found a astigmatic symptom or it developed
6. Not checked
7. Others (Please, in detail

Q 35: (1) Since you started to work at VDT, have you experienced any abnormalcy in your eyes (e.g. eyesight worsed, eyes feel tired, disorder in the color sense, red eyes,

watery eyes, etc.).

1. Yes
2. No

Q 35: (2) If you answer is "Yes" in the above question, please describe the conditions and situations then. For instance, relationship between the symptom and the work will be very unformative.

Q 36: Have you ever received medical treatment for the trouble in your eyes since you started your work at VDT?

1. Yes (Diagnosis:)
2. No

Q 37: Please mention about your physical conditions of late. When you have any one of symptoms like stiffness, dullness and pains, give a round mark on the figure 1 or 2 and if you do not have it, on 3.

		Physical part	Almost always	Sometimes	None
Neck	Right	1	2	3	
	Left	1	2	3	
Shoulder	Right	1	2	3	
	Left	1	2	3	
Arms	Right	1	2	3	
	Left	1	2	3	
Fingers	Right	1	2	3	
	Left	1	2	3	
Back		1	2	3	
Low back		1	2	3	
Legs	Right	1	2	3	
	Left	1	2	3	

Q 38: Do you find any symptom which falls under the description in the list as follows? If you have it, give a round mark on 1, otherwise, on 2.

	Yes	No
1. Head feels heavy:	1	2
2. Limbs feel like lead:	1	2
3. Head feels fuzzy:	1	2
4. Eyes get tired:	1	2
5. Feel like lying:	1	2
6. Unable to consolidate ideas:	1	2
7. Become fretful and irritated:	1	2
8. Easily forgetful:	1	2
9. Many mistakes committed:	1	2
10. Impatient:	1	2
11. Headache:	1	2
12. Shoulders stiff:	1	2
13. Low back pains:	1	2
14. Mouth is dry:	1	2
15. Dizzy spells:	1	2
16. Frequent diarrhea:	1	2
17. Frequent constipation:	1	2
18. Nauseous feeling:	1	2
19. Coughing with phlegm:	1	2
20. Throbbing and panting:	1	2
21. Sudden feeling of heaviness in the chest:	1	2
22. Declined sexual desire:	1	2
23. Frequent insomnia:	1	2
24. Hives or eczema easily come out:	1	2
25. Ears ring:	1	2
26. Hardship to hearing:	1	2
27. Difficult urination:	1	2
28. Others:	1	2

Q 39: So far you have referred to you physical conditions. Now please mention about what kind of trouble hyou have had, if any, since you started your work at VDT. Do you have any other matters of anxiety?

Q 40: In addition, your frank comments on the matters related to your colleague's health and safety as well as to the work itself are expected.

Q 41: (1) The management of your company has ever taken measures for maintenance of worker's safety and health.

1. Medical checkups in general
2. Specific medical examination
3. Nothing has been done

Q 41: (2) If you put a round mark on 2, please make the contents of medical examination being made.

Q 42: Questions to female workers.

- (1) Menstruation:
 1. Irregular
 2. Not irregular
 3. Others
- (2) During the period:
 1. Cramps involved
 2. Cramps not involved
 3. Others
- (3) Menstruation leaves (legally stipulated):
 1. Every period, they are taken
 2. About half of them are taken
 3. Sometimes, they are taken
- (4) Have you become pregnant since you started the work at VDT?:
 1. Yes
 2. No
- (5) In case of "Yes", did you have any abnormality in it?:
 1. Toxemia of pregnancy
 2. Near miscarriage
 3. Others
 4. Normal delivery
- (6) Was any abnormality in your delivery experienced after starting with the VDT work?:
 1. Miscarriage
 2. Premature birth
 3. Profuse bleeding
 4. Caesarean birth
 5. Still-birth
 6. Others
 7. Normal delivery

Questions about Your Profile

Q 43: Please give a round mark on the figure indicating your sex and age.

- Sex: 1. Male 2. Female
- Age: 1. Up to 19 2. 20 - 24 3. 25 - 29
 4. 30 - 34 5. 35 - 39 6. 40 - 44
 7. 45 - 49 8. 50 - 54 9. 55 - 59
 10. More than 60 inclusive

Q 44: About the form of your employment.

1. Regular
2. Non-regular
3. Part-timer

4. Temporary helper 5. Lent-a-worker 6. Home-workstation

Q 45: About the form of your service.

1. Daily work 2. Shift work 3. Permanent night (shift) work

Q 46: The undertaking whom you work for belongs to which industry classified in the light as follows:

1. Construction 2. Manufacturing
 3. Wholesale and retail 4. Finance and insurance
 5. Real estate 6. Transports
 7. Electricity, gas, water, heat supplying
 8. Services 9. Education
 10. Public service (state and local)
 11. Software industries 12. Medical services
 13. Communication and information
 14. Printing and publication 15. Others ()

Q 47: What kind of trade you follow?

(For instance: clerical trade in the business, staff for general affairs, typist, VDT operator, staff to medical care business would be appropriate)

Q 48: If you have some feelings in your darily life, please mark below.

1. Incresed workload
 2. Longer hours restricted by job
 3. Job complicated/sophisticated
 4. Always feel driven by working schedules
 5. Can't perform jobs with latitude
 6. Jobs intensified
 7. Mistakes no more permitted
 8. Can't take paid leave freely
 9. Heavier responsibilities
 10. Controlled by mechanically integrated systems
 11. Less leisure time
 12. Less comfortable time for enjoyment with family members/friends
 13. Can't enjoy recess time during recess period
 14. Can't enjoy daily life normally
 15. Apprehension of workers being shadowed by jobs always
 16. Apprehension of workers being disqualified for VDT jobs
 17. Apprehension of workers not catching up with technological innovation
 18. Can't enjoy enough sleeping time at home
 19. Norm intensified
 20. Jobs becoming monotonous
 21. Overtime work incresed due to introduction of VDT

- devices
 22. Human relations at workshop worsened
 23. Can't have enough sleeping time as permitted
 24. Job preparation and discussions not smoothed well
 25. Family responsibilities increased

Q 49: What do you wish to improve in your workstation, please give us three priorities from below listed.

1. Improvement of air ventilation, temperature of workstation
 2. Reduction in VDT working time
 3. Improvement in working procedure and process
 4. Comfortable rest room for workers lieing down
 5. Reduction in workload
 6. Increase of recess time
 7. Improvement of lighting
 8. Reduction of noise
 9. Better human relations
 10. Transfer to other workstations/jobs
 11. Correction of labor administration encouraging workers' competition ideas
 12. Need for persons to consult with
 13. Better conditions enabling workers to take sick leave
 14. Allow workers to go toilet freely
 15. Others

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