CHAPTER IV

RESULTS

General characteristics of the sample population:

The questionnaires were distributed to 362
professional nurses from November 15, 1993 to January 21,
1994. The questionnaires were returned by 327 subjects, and
301 were considered complete and suitable within the relevant
selection criteria for analysis for both the case and control
group. From the 301 subjects who remained in the study. The
sample consisted of 151 subjects for case group and 150
subject for control group. The response rate was 83.15%
(table 3)

Table 3   Summary of number of professional nurses' respondent

Hospital	Number of Distributed	Questionnaire Returned	Completed	%
Case Group				
1. Samitivej	45	45	45	100.0
2. Bamrungrad	5	5	5	100.0
3. Phayathai I	31	28	28	90.32
4. Chaopraya	14	14	14	100.0
5. Thonburee	5	5	5	100.0
6. Ramkumhaeng	10	10	10	100.0
7. Phayathai II	19	11	11	57.89
8. Paolo	3	3	3	100.0
9. Mayo	10	10	10	100.0
10. Bangkok	20	20	20	100.0
Control Group				
1. Klang	20	20	20	100.0
2. Police	20	16	14	70.0
3. Lertsin	20	16	16	30.0
4. Ramathibodee	20	15	13	65.0
5. Vachira	20	18	18	90.0
6. Kingmongkut	20	16	12	60.0
7. Child	20	17	16	80.0
8. Rajvithee	20	19	18	90.0
9. Pinkloa	20	20	20	100.0
10. Siriraj	20	19	13	65.0
Total	362	327	301	83.15

In the first stage of data analysis, a comparison of variables between the two groups was by descriptive statistic. In the second stage of analysis, risk factors for univariate analysis show by odd ratio and 95% CI OR. The method of multiple logistic regression was used to analyse the multivariates so as to identify which were the risk factors that could predict the phenomenon of Brain Drain.

I.   The Comparison of demographic data between case group and control group

This research studied 301 professional nurses, which consisted of 151 nurses for the case group and 150 nurses for the control group.

Age

For the case group, the average age was 26.41 years, with a range of 22-30 years. For the control group, the average age was 26.44 years, with a range of 21-32 years.

Table 4   Age

TYPE	CASE		CONTROL	
Age in years	Range	22-30	Range	21-32
	Mean	26.44	Mean	26.41
	SD	2.084	SD	2.082

Marital status

MARITAL STATUS
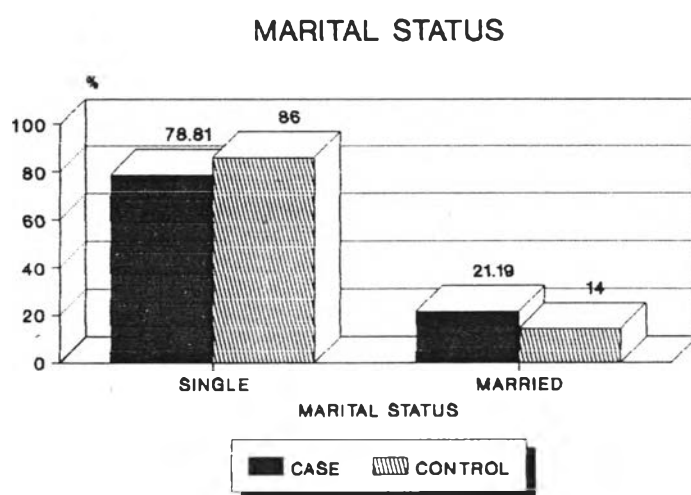
The case group, the majority 78.81% were single and 21.19% were married. The control group, the majority 86.0% were single and 14.0% were married.

Spouse's occupation

SPOUSE'S OCCUPATION
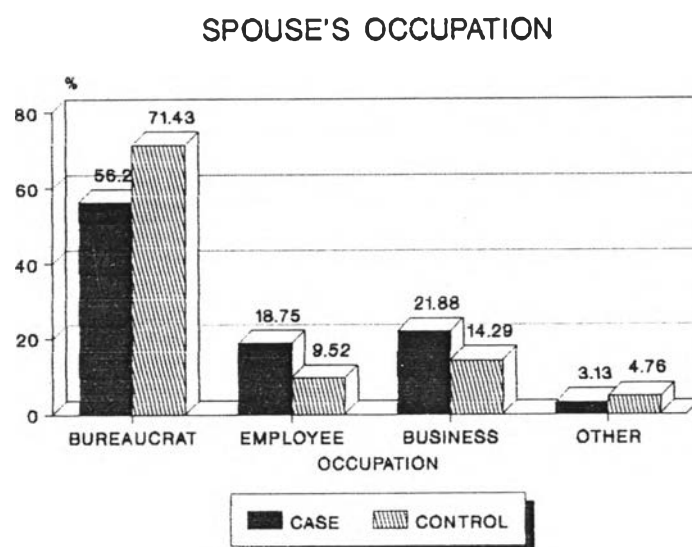
For married nurses in the case group, the majority 56.25% were bureaucrats. A smaller proportion 21.88% were business owness. The control group, the majority majority 71.43% were bureaucrat. A smaller proportion 14.29% were business owness.

Number of Dependents

The majority in both group do not have dependents, the case 39.74% and control group 33.33%. A smaller propotion 17.22% were father and mother for case group and 30% for the control group.

Family income

For nearly half in both groups the family income was adequate, for case group 53.6% and 59.33% for control group.

Table 5 Number of dependents and family income

Type	Case		Control	
	N	%	N	%
Number of dependents				
1. Father and mother	26	17.22	45	30.00
2. Father	4	2.65	4	2.67
3. Mother	22	14.57	30	20.00
4. Husband	4	2.65	–	–
5. Children	11	7.28	9	6.0
6. Cousin	15	9.93	5	3.33
7. Other	9	5.96	7	4.67
8. None	60	39.74	50	33.33
Family income				
1. Inadequate,with debts	4	2.65	6	4.00
2. Inadequate,with debts	15	9.93	16	10.67
3. Adequate	81	53.60	89	59.33
4. More than adequate	51	33.77	39	26.00

Residence

Little difference in both groups, the majority in the case group was 58.28% residencing in public hospital nurses dormitories. For the control group 44.67% residencing in the hospital nurses dormitory.

Table 6   Residence

Type	Case N	%	Control N	%
Residence				
1. Hospital's dormitory	88	58.28	67	44.67
2. Hospital's house	–	–	–	–
3. House for rent, can claimed	3	1.99	1	0.67
4. House for rent, can't claimed	3	1.99	1	0.67
5. Own a house	15	9.93	15	10.00
6. Living with others	2	1.32	3	2.00
7. Hospital's dome & own a house	39	25.83	63	42.00
8. Other	1	0.66	–	–

Travelling to work

The majority for case group 52.98% were walking to work. For the control group, the majority 39.33% of travelling to work by bus. Convenience of travelling to work in the case group 89.40% considered their travel convenient and for the control group 74% considered their travel convenient.

Table 7 Travelling to work

Type	Case N	%	Control N	%
Travelling to work by				
1. Bus	37	24.50	59	39.33
2. Ferry	2	1.32	2	1.33
3. Train	–	–	–	–
4. Private car	21	13.91	12	8.00
5. Walk	80	52.98	46	30.67
6. Walk and bus	9	5.96	30	20.00
7. Other	2	1.32	1	0.66
Travelling to work				
1. Convenient	135	89.40	111	74.00
2. Inconvenient	16	10.60	39	26.00

II Education Background and Work Performance

Most of nurses in both groups, the majority 64.90% for the case group and 52.67% for control group graduated between 1987 - 1989.

Opportunity for further study in both groups were nearly the same at 3.31% for the case group and 3.33% for the control group.

Table 8   Education background

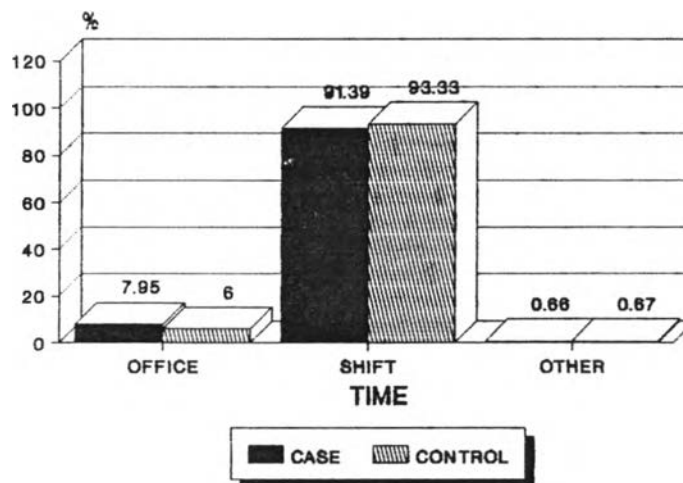| | Case | | Control | |
Type	N	%	N	%
Graduated year				
1. 1987 - 1989	98	64.90	79	52.67
2. 1990 - 1992	53	35.10	71	47.33
Institution				
1. Under the MOPH.	13	8.61	40	26.67
2. Under the MOUA.	88	58.27	26	17.33
3. Under the BMA.	11	7.29	38	25.17
4. Under the MOD.	7	4.64	32	21.19
5. Under the MOI.	6	3.97	14	9.27
6. Other	26	17.22	-	-
Highest level of education				
1. Bachelor deg.in nursing	146	96.69	145	96.66
2. Master deg.in nursing	1	0.66	1	0.66
3. Master deg.in other areas	3	1.99	4	2.67
4. Other	1	0.66	-	-

WORK EXPERIENCE
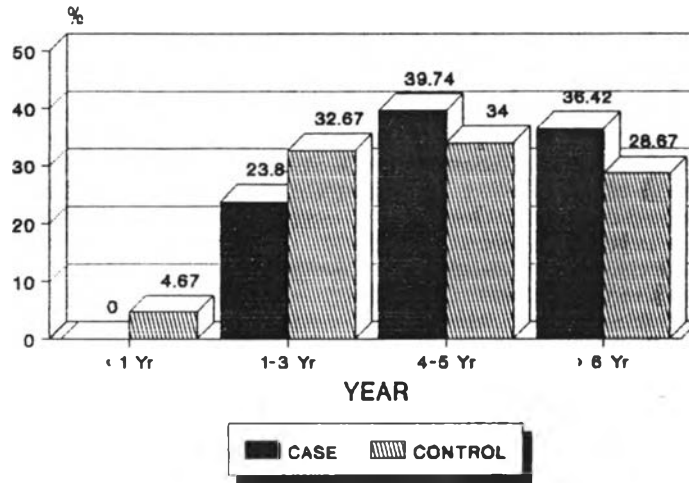
Nearly half of work experience 39.74% for case group and 34% for control group with a range of 4-5 years.

WORK SHIFT

Most of them in both groups 91.39% for case group and 93.33% for control group were the rotating workshift.

Nearly half of the number of beds were responsed by nurses were 39.07% for case group and 32.67% for control group, with a range of 30-39. The majority, 52.98%, type of patients were ordinary for case group and 48.67% for control group. The number of nurses in both groups, the majority 53.64% for case group and 48.67% for control group, with a range of 10-19 persons.

Table 9 Work performance (a)

	Case		Control	
Type	N	%	N	%
Area of work				
1. Emergency	5	3.31	12	8.00
2. Medical	1	0.66	17	11.33
3. Surgical	5	3.31	30	20.00
4. ICU.	17	11.26	18	12.00
5. Pediatric	5	3.31	11	7.33
6. OR.	12	7.95	5	3.33
7. LR.	8	5.30	7	4.67
8. OB.& Gyn.	12	7.95	20	13.33
9. O.P.D.	10	6.62	2	1.33
10. Nursery	5	3.31	2	1.33
11. Med.& Surg.	58	38.41	2	1.33
12. Other	13	8.61	24	16.00
Number of beds				
1. None	19	12.58	24	16.00
2. < 10	15	9.93	18	12.00
3. 10 - 19	14	9.27	11	7.33
4. 20 - 29	12	7.95	23	15.33
5. 30 - 39	59	39.07	49	32.67
6. > 40	20	13.25	20	13.33
7. No response	12	7.95	5	13.33

Table 10 Work performance (b)

Type	Case		Control	
	N	%	N	%
Type of patients				
1. Ordinary	80	52.98	69	46.00
2. Ordinary & special	38	25.17	45	30.00
3. Special	11	7.28	15	10.00
4. Other	22	14.57	21	14.00
Number of nurses				
1. < 10	24	15.89	39	26.00
2. 10 - 19	81	53.64	73	48.67
3. 20 - 29	25	16.57	28	18.67
4. > 30	21	13.91	8	5.33
5. No response	-	-	2	1.33

Nurses had the opportunity for part-time work in both group, the majority 66.89% for the case group and 70.00% for the control group. Type of part-time work, the majority 37.75% was special nurse for case group different from control group was 43.33% of private hospital for part-time work.

Table 11. Work Performance (c)

	Case		Control	
Type	N	%	N	%
Part-time work				
1. None	50	33.11	45	30.00
2. Part time work	101	66.89	105	70.00
* Special nurse	57	37.75	25	16.67
* Private hospital	32	21.19	65	43.33
* Clinic	4	2.65	6	4.00
* Private business	1	0.66	4	2.67
* Other	7	4.64	–	–

	Case	Control
Approximate renumeration	range 500-20,000 mean 2,595.74 SD. 3267.37 missing 15 cases	range 600-20,000 mean 2,880.42 SD. 2743.81 missing 7 cases
Expectation of minimum salary	range 6,000-40,000 mean 11,177.33 SD. 4004.82 missing 1 case	range 6,500-20,000 mean 10,904.80 SD. 2836.93 missing 4 cases

The average reward from part-time work were 2597.74 baht, with a range of 500-20,000 baht for the case group, and 2,880.42 baht, with a range of 600-12,000 baht for the control group.

Expectation of salary was almost the same in both groups. The average expected salary was 11,177.33, with a range of 6,000-40,000 baht for the case group and 10,904.80 baht, with a range of 6,500-20,000 baht for the control group.

The average salary was 5,941.85 baht, with a range of 4,000-8,500 baht for the case group and 6,890.43 baht, with a range of 5,500-8,500 baht for the control group.

The average compensation from over-time work was 1,493.73 baht, with a range of 250-6,400 baht for the case group, and 1154.51 baht, with a range of 300-3,500 baht for the control group.

The average compensation from shift allowances was 781.80 baht, with a range of 20-4,200 baht for the case group and 593.13 baht, with a range of 80-3,000 baht for the control group.

The average compensation from cost of living allowance was 289.29 baht per month, with a range of 50-1,000 baht for the case group. For the control group did not receive any allowance for the cost of living.

Table 12 Work Performance (d)

	Case		Control	
Type	N	%	N	%
Salary	range 4,000-8,500		range 5,500-8,500	
	mean 5,941.85		mean 6,890.43	
	SD. 1084.04		SD. 1257.10	
Pay for over-time work	range 250-6,400		range 300-3,500	
	mean 1,493.73		mean 1,154.51	
	SD. 1122.70		SD. 707.13	
Shift allowances	range 20-4,200		range 80-3,000	
	mean 781.80		mean 593.13	
	SD. 1106.17		SD. 591.38	
	missing 2 cases			
Cost of living	range 50-1,000		None	
	mean 289.29			
	SD. 78.49			

III. ANALYSIS FACTORS INFLUENCING BRAIN DRAIN AND HYPOTHESIS TESTING

1. Marital Status

Table 13 Frequency Distribution and Percentage of Marital Status

MARITAL STATUS	CASE		CONTROL	
	N	%	N	%
Married	32	21.19	25	14.00
Single	119	78.81	129	86.00
Total	151	100	150	100

x^2 = 2.68   df = 1   p > 0.05

OR = 1.65   95% CI OR [0.09 - 3.02]

From table, nurses in the case group 21.19% and 14% in the control group of marital status were married.

The chi-square test of association found that marital status was no significant association with Brain, at P > 0.05. The odd ratio was not statistically significant. The hypothesis that there was no association in risk between cases and controls given exposure, was rejected.

2. Spouse's Occupation

Table 14 Frequency Distribution and Percentage of Spouse's
           Occupation

SPOUSE	CASE		CONTROL	
	N	%	N	%
Bureaucrat	18	56.25	15	71.43
Not Bureaucrat	14	43.75	6	28.57
Total	32	100	21	100

x^2 = 7.06   df = 1   p < 0.01

OR = 0.51   95% CI   OR   [0.10 - 1.05]

From table, nurses in the case group 56.25% and 71.43% in the control group of spouse's occupation were bureaucrat.

For chi-square test found that spouse's occupation who were bureaucrat was significant negative association with Brain Drain at P < 0.01.

The odd ratio appears to be associated with a protective effect against Brain Drain, the odd ration value indicated that it has a negative association, these association may be aritificial association due to bias. The hypothesis was rejected.

3. Number of dependents

Table 15 Frequency distribution and percentage of number of

dependents

	CASE		CONTROL	
	N	%	N	%
Have	91	60.26	100	66.67
None	60	39.74	50	33.33
Total	151	100.00	150	100.00

x^2 = 1.32   df = 1   p > 0.05

OR = 0.76   95% CI   OR   [0.47 - 1.21]

From table, nurses in the case group 60.26% and 66.67% in the control group had number of dependents.

The chi-square test found that nurses who had number of dependents were no significant association with Brain Drain, at p > 0.05.

The odd ratio was not statistically significant. The hypothesis that was no association in risk between cases and controls given exposure, was rejected.

4. Family income

Table 16 Frequency distribution and percentage in family

income

	CASE		CONTROL	
	N	%	N	%
Inadequate	19	12.58	22	14.67
Adequate	132	87.42	128	85.33
Total	151	100.00	150	100.00

$x^2 = 0.27$ df = 1   p > 0.05

OR = 0.83   95% CI   OR   [0.43 − 1.6]

From table nurses who had inadequate family income in the case group was 19% and in the control group 22%. Test of association found that family income was no significant association with Brain Drain, at P > 0.05. The odd ratio was not statistically significant. The hypothesis was rejected.

5. **Travelling to work**

Table 17   Frequency distribution and percentage in
            travelling to work

	CASE		CONTROL	
	N	%	N	%
Inconvenient	16	10.60	39	26.00
Convenient	135	89.40	111	74.00
Total	151	100.00	150	100.00

x^2 = 11.95   df = 1   p < 0.0005

OR = 0.33   95% CI   OR   [0.17 - 0.63]

From table, nurses who had difficulty in travelling
to work 10.60% in case group and in the control group 26%.
Test of association found that nurses who had difficulty in
travelling to work were significant negative association with
Brain Drain at P < 0.0005

The odd ratio appears to be associated with a
protective effect against Brain Drain, the odd ratio value
indicated that it has a negative association, these
association may be aritificial association due to bias. The
hypothesis was rejected.

6. Salary

Table 18 Frequency distribution and percentage of salary

	CASE		CONTROL	
	N	%	N	%
Dissatisfaction with salary	119	94.44	121	89.63
Satisfaction with salary	7	4.64	14	10.37
Total	126	100.00	135	100.00

$$x^2 = 2.04 \qquad df = 1 \qquad p > 0.05$$

$$OR = 1.96 \qquad 95\% \; CI \quad OR \quad [0.76 - 5.04]$$

Nurses who had dissatisfaction with salary 94.44% in the case group, in the control group 89.63%. Test of association found that nurses who had dissatisfaction with salary were no significant association with Brain Drain at $P > 0.05$.

The odd ratio was not statistically significant. The hypothesis was rejected.

7. Compensation

Table 19 Frequency distribution and percentage of compensation

	CASE		CONTROL	
	N	%	N	%
Dissatisfaction with compensation	125	89.93	135	94.41
Satisfaction in with compensation	14	10.07	8	5.59
Total	139	100.00	143	100.00

$x^2 = 6.62$ df = 1 $p < 0.01$

OR = 0.30   95% CI   OR   [0.11 - 0.78]

From table, nurses who had dissatisfaction with compensation 89.93% in the case group, in the control group 94.41%. Test of association found that nurses who had dissatisfaction with compensation were significant negative association with Brain Drain at $P < 0.01$.

The odd ratio appears to be associated with a protective effect against Brain Drain, the odd ratio value indicated that it has a negative association, these association may be aritificial association due to bias. The hypothesis was rejected.

8. Fringe Benefit

Table 20 Frequency distribution and percentage of fringe

benefit

	CASE		CONTROL	
	N	%	N	%
Dissatisfaction with fringe benefit	50	34.25	58	42.34
Satisfaction in with fringe benefit	96	65.75	79	57.66
Total	146	100.00	137	100.00

x^2 = 1.95   df = 1   p > 0.05

OR = 0.70   95% CI   OR   [0.43 - 1.14]

From table, nurses who had dissatisfaction with fringe benefit 34.25% in the case group, in the control group 42.34%. Test of association found that this was no significant association with Brain Drain at P > 0.05.

The odd ratio was not statistically significant. The hypothesis was rejected.

9. Working condition

Table 21   Frequency distribution and percentage of working
condition

	CASE		CONTROL	
	N	%	N	%
Dissatisfaction with working condition	72	54.14	89	65.93
Satisfaction with working condition	61	45.86	46	34.07
Total	133	100.00	135	100.00

$x^2 = 3.88$ df = 1 $p < 0.05$

OR = 0.61   95% CI   OR   [0.37 - 0.99]

Nurses who had dissatisfaction with working condition
54.14% in the case group, in the control group 65.93%. Test
of association found that nurses who had dissatisfaction with
working condition were significant negative asssociation with
Brain Drain at P.< 0.05.

The odd ratio appears to be associated with a
protective effect against Brain Drain, the odd ratio value
indicated that it has a negative association, these
association may be aritificial association due to bias. The
hypothesis was rejected.

10. Work itself

Table 22 Frequency distribution and percentage of work

itself

	CASE		CONTROL	
	N	%	N	%
Dissatisfaction with work itself	61	44.85	60	45.11
Satisfaction with work itself	75	55.15	73	54.89
Total	136	100.00	133	100.00

$x^2 = 0.001$ df = 1   p > 0.05

OR = 0.98   95% CI   OR   [0.61 - 1.5]

Nurses who had dissatisfaction with work itself 44.85% in the case group, in the control group 45.11%. Test of association found that nurses who had dissatisfaction with work itself were no significant association with Brain Drain at P > 0.05.

The odd ratio was not statistically significant. The hypothesis was rejected.

11. Interpersonal relation

Table 23   Frequency Distribution and Percentate of

Interpersonal Relation

	CASE		CONTROL	
	N	%	N	%
Dissatisfaction with interpersonal relation	24	17.52	16	10.88
Satisfaction in with interpersonal relation	113	82.48	131	89.12
Total	137	100.00	147	100.00

x^2 = 2.58   df = 1   p > 0.05

OR = 1.74   95% CI   OR   [0.88 - 3.44]

Nurses who had dissatisfaction with interpersonal relation 17.52% in the case group, in the control group 10.88%. Test of association found that this no significant association with Brain Drain at P > 0.05.

The odd ratio was not statistically significant. The hypothesis was rejected.

12. <u>Supervision</u>

Table 24   Frequency Distribution and Percentage of
            Supervision

	CASE		CONTROL	
	N	%	N	%
Dissatisfaction with supervision	55	39.86	29	20.14
Satisfaction in with supervision	83	60.14	115	79.86
Total	138	100.00	144	100.00

x^2 = 13.10   df = 1   p > 0.01

OR = 2.63   95% CI   OR   [1.55 - 4.47]

From table, nurses who had dissatisfaction with supervision 39.86% in the case group, in the control group 20.14%. Test of association found that nurses who had dissatisfaction with supervision were significant association with Brain Drain at P < 0.01.

The odd ratio showed that nurses who had dissatisfaction with supervision to Brain Drain was 2.63 times compare to those who had satisfaction supervision. The odd ratio was statistically significant. The hypothesis that there was association in risk between cases and controls given exposure, was accepted.

13. Advancement opportunity

Table 25 Frequency Distribution and Percentage of

Advancement opportunity

	CASE		CONTROL	
	N	%	N	%
Dissatisfaction with advancement opportunity	95	67.86	104	71.23
Satisfaction with advancement opportunity	45	32.14	42	28.77
Total	140	100.00	146	100.00

x^2 = 0.38   df = 1   p > 0.05

OR = 0.85   95% CI   OR   [0.51 - 1.41]

From table, nurses who had dissatisfaction with advancement opportunity 67.86% in the case group, in the control group 71.23%. Test of association found that this was no significant association with Brain Drain at P > 0.05.

The odd ratio was not statistically significant. The hypothesis was rejected.

14. Policy and Administration

Table 26   Frequency Distribution and Percentage of Policy
and Administration

	CASE		CONTROL	
	N	%	N	%
Dissatisfaction with policy and administration	62	44.29	61	47.29
Satisfaction with policy and administration	78	55.71	68	52.71
Total	140	100.00	129	100.00

$x^2 = 0.24$ df = 1   p > 0.05

OR = 0.89   95% CI OR [0.54 - 1.43]

Nurses who had dissatisfaction with policy and administration 44.29% in the case group, in the control group 47.29%. Test of association found that this was no significant association with Brain Drain at P > 0.05 .

The odd ratio was not statistically significant. The hypothesis was rejected.

Table 27. Summary of data analysis

FACTOR	x^2	df	P	OR	95% CI OR
1. Marital status	2.68	1	>0.05	1.65	0.09-3.02
2. Spouse's occupation	7.06	1	<0.01	0.51	0.10-1.05
3. Number of dependents	1.32	1	>0.05	0.76	0.47-1.21
4. Family income	0.27	1	>0.05	0.83	0.43-1.6
5. Travelling to work	11.95	1	<.0005	0.33	0.17-0.63
6. Salary	2.04	1	>0.05	1.96	0.76-5.04
7. Compensations	6.62	1	<0.01	0.30	0.11-0.78
8. Fringe benefit	1.95	1	>0.05	0.70	0.43-1.14
9. Working condition	3.88	1	<0.05	0.61	0.37-0.99
10. Work itself	0.001	1	>0.05	0.98	0.61-1.5
11. Interpersonal relation	2.58	1	>0.05	1.74	0.88-3.44
12. Supervision	13.10	1	<0.01	2.63	1.55-4.47
13. Advancement opportunity	0.38	1	>0.05	0.85	0.51-1.41
14. Policy and administraion	0.24	1	>0.05	0.89	0.54-1.43

Nurses recommendations

The following measures are recommended to the hospital management authorities in order to minimize the occurrence of Brain Drain for the public sector.

Table 28. Nurses recommendation

Recommendation	CASE		CONTROL	
	N	%	N	%
1. Salary and Compensation.				
* Salary must be commensurate with economic conditions.	76	0.33	75	50.0
* Increased compensations rate.	17	11.26	33	22.0
2. Increased fringe benefit should be provide.	29	19.21	62	41.33
3. Work itself and working condition.				
* Decreased heavy shift duty.	7	4.64	4	2.67
* Increased the number of nurses commensurate with workload.	34	22.52	52	34.67
* Introduce the new technology.	1	0.66	4	2.67
* Prevention of transferable disease from patient to nurses.	2	1.32	5	3.33
* Provide better working environment.	6	3.97	1	0.66
4. Encourage knowledge and further study.	59	39.08	46	30.67

Recommendation	CASE		CONTROL	
	N	%	N	%
5. Supervision and policy.				
* Supervisor should have ability to management.	15	9.93	6	4.0
* Supervisor should have impartiality.	16	10.60	6	4.0
* To cancel senior system.	3	1.99	–	–
* Do not classify group.	2	1.32	3	2
* To fill more position.	9	5.96	6	4.0
* Establish morale and willpower among nurses.	3	1.99	10	6.67
* Delete unnecessary policy and flexible under certain situation.	30	19.87	23	15.33