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Factors affecting organizational stress and scientific productivity of scientists of Punjab Agricultural University, Ludhiana

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ABSTRACT

The present study was conducted in four constituent colleges *viz*., College of Agriculture, College of Agricultural Engineering & Technology, College of Basic Sciences and Humanities and College of Home Science and Krishi Vigyan Kendras (KVKs) of Punjab Agricultural University, Ludhiana to measure the scientific productivity of the agricultural scientists and to analyse the factors affecting organizational stress. The scientists belonging to teaching, research and extension streams were identified from different cadres *i.e.*, Professors, Associate Professors and Assistant Professors. From these, 91 teachers, 105 researchers and 54 extensionists having minimum five years of service experience were selected from four constituent colleges and KVKs in proportion to the number of scientists in teaching, research and extension streams by following the probability proportional to size. Thus, a total of 250 scientists constituted the sample of the present study. Data were collected from the scientists by using distributed questionnaire approach and through mailed questionnaire from extensionsists working in KVKs under the control of PAU, Ludhiana. The scientists from all the three cadres *i.e.* teachers, researchers and extensionists had medium level of organization stress such as self, family, environmental factors, organizational factors, organizational culture, role in organization, interpersonal relationship at work, workload, strict adherence to working hours, influence on career development and home-work interference. The scientific productivity was found to be medium in all the three cadres *i.e.* teaching, research and extension.

INTRODUCTION

Now-a-days, working stress is the fastest growing cause of stress. Stress is one of the important aspects influencing the employees' performance in the organization. Organizational stress is the stress which occurs at the workplace. It is the result of those factors in an organization that cause stress to the employee and inturn has negative organizational consequences. Organizational stress is the stress arising from scientist's perception of an environmental demand which exceeds his resources and is distinct from their coping process and responses to the stress interaction. In order to improve the productivity of an organization, it is important to study stress related problems of the scientists/employees for achieving the predetermined goals. The issues which are gaining these days are organizational/occupational role stress, poor working environment, lack of resources and poor managerial control, etc. Without proper working environment, there will be no cohesion in the organization and the objectives of the organization will not be met (Manjunath *et al.*, 2008 a and b). Even the better facilities provided by any organization are not able to control the increasing level of stress among the employees. There are plenty of other problems that employees come across at work such as job competition, task autonomy, financial crisis, organizational commitment, etc. The contribution of the scientific community is not always steady since there are several ups and downs due to multi dimensional personal, socio-psychological and organizational factors (Kiran *et al.*, 2010). Beside these, employees are expected to meet organizational targets, attend meetings on time, fit in with changes in organization by learning and following up new procedures. All these can negatively

influence the health insurance costs, competitiveness and productivity of the organization. Too much or too little stress can reduce a person's productivity (Oliver and Ventor, 2003). If there is low level of organizational stress, the productivity of the scientists working in the organization will be more. So, keeping these facts in mind, the present study was undertaken to study the factors affecting the organizational stress and scientific productivity of scientists of Punjab Agricultural University, Ludhiana.

METHODS

The present study was undertaken at Punjab Agricultural University, Ludhiana during the year 2012. A total of 250 scientists having minimum five years of service experience were selected from the four constituents colleges of the university *viz*., College of Agriculture, College of Agricultural Engineering and Technology, College of Basic Sciences and Humanities and College of Home Science and KVKs working under the control of Directorate of Extension Education (DEE) of PAU, Ludhiana. The data were collected from the scientists by using distributed questionnaire approach and mailed questionnaire . Pre-testing of the research instruments was done on 20 non-sampled agricultural scientists of PAU, Ludhiana and certain ambiguities were removed and some of the parameters of teaching, research and extension were added. The reliability of the research instruments was found out by using split half method and its content validity was ensured.

For measuring the factors affecting organizational stress, factors were operationalized as the aspects which contribute to the organizational stress of scientists. The modified scale of occupational stress check list of Cox and Griffith (1996) was used to measure the organizational stress. The responses of the scientists were taken on four point continuum *i.e.* major, moderate, minor and not at all and scores of 4,3,2, and 1 were assigned to positive statements and *vise versa* for the negative statements. The extent of factors was measured into low, medium and high based on the scores of the factors affecting the organizational stress by using cumulative cube root method (Singh, 1975).

Different parameters of scientific productivity for teaching, research and extension were identified and finalized with the help of available literature and thorough discussion with the experts from Department of Extension Education and Department of Home Science Extension and Communication Management. The information related to scientific productivity was collected from the scientists for the last five years. Scientific productivity has been operationalized as the sum of the scores obtained by the scientists on different parameters of performance in teaching, research and extension during the last five years.

For measuring the scientific productivity in teaching, different parameters such as number of courses taught, number of students guided, membership of post graduate advisory's committee, number of books and manuals published, participation in seminars/workshops, conferences attended and paper presented, summer/winter schools organized, acted as expert, examiner, paper-setter and evaluator, involvement in students co-curricular activities, Inchargeship of undergraduate (UG) and post graduate (PG) programmes, lectures delivered and awards received in teaching.

Various projects handled, research papers and abstracts published, recommendations in Package of practices, awards received in conferences/seminars, varieties developed, fields trials conducted and awards received in research were the various parameters used for measuring the scientific productivity in research. Parameters identified for measuring the scientific productivity of scientists in extension were number of field demonstrations organized, number of adaptive trials conducted, number of popular articles published, number of consultancy services provided outside the university, number of radio and T.V talks delivered and compeered, training camps organized and lectures delivered, invited lectured delivered, training courses, field days, campaigns, exhibitions organized, acted as member of execution team of extension projects and awards received in extension.Scores were assigned on the basis of expert opinion and available literature. Based on the scores of scientific productivity, the scientists were classified into low, medium and high categories by using the cumulative cube root method (Singh, 1975). The data were statistically calculated and analyzed to workout frequency and percentage to figure out the meaningful interferences.

OBSERVATIONS AND ANALYSIS

The results of the study along with relevant discussion have been given under the following headings:

Profile of the scientists:

It is evident from the data presented in Table 1 that majority of the scientists (40.40%) belonged to the age group of 47-60 years and 61.60 per cent were males and 38.40 per cent were females. Further, majority of the scientists (56.40%) belonged to urban areas and hailed from nuclear familes (69.20%). Maximum numbers of the scientists were married (94.40%) and were Ph.D. degree holders (88.80%). On the other hand, about 64 per cent of the scientists had M.Sc. degree at the time of joining the service and almost equal percentage of scientists *i.e.* 36.40 per cent each had service experience of 5-12 and 13-20 years, respectively.

Majority of the scientists (68.40%) belonged to service class category and maximum number of them used their personal car and scooter to reach their office. Further, about 55.20 per cent and 30.0 per cent of the scientists had life

Table 1 : Distribution of the scientists according to personal characteristics **(n=250)**

Characteristics	Category	Frequency	Percentage
Age (years)	30-37	55	22.76
	38-46	94	37.60
	47-60	101	40.40
Gender	Male	154	61.60
	Female	96	38.40
Family background	Rural	109	43.60
	Urban	141	56.40
Family type	Nuclear	173	69.20
	Joint	77	30.80
Marital status	Married	236	94.40
	Unmarried	9	3.60
	Single	4	1.60
	Divorcee	1	0.40
Educational qualifications	Ph.D.	222	88.80
	M.Sc.	28	11.20
Qualification at the time of joining the service	Ph.D.	91	36.40
	M.Sc.	159	63.60
Service experience (years)	5-12	91	36.40
	13-20	90	36.00
	21-28	46	18.40
	29-36	23	9.20
Occupation of spouse	Service	171	68.40
	Business	23	9.20
	Farming	1	0.40
	Housewife	41	16.40
	Not applicable (Unmarried)	14	5.60
Mode of conveyance	Car	149	59.60
	Scooter	84	33.60
	Bus	14	5.60
	Train	1	0.40
	By foot	2	0.80
Membership of professional societies	Life membership		
	1-3	138	55.20
	4-6	75	30.00
	7-9	29	11.26
	Annual membership		
	1-4	143	57.20
	5-8	38	15.20
	9-12	12	4.80

membership of 1-3 and 4-6 professional societies, respectively whereas more than half of the scientists (57.20%) had annual membership of 1-4 of professional societies.

Extent of factors contributing organizational stress:

A critical look at the data presented in Table 2 showed that among personal factors causing stress, self belonged to 'medium' and 'high' level of stress as indicated by teachers (47.25% and 14.28%), researchers (53.33% and 23.81%) and extensionists (55.55% and 16.67%), respectively. On the other hand, in case of spouses, majority of the scientists *i.e.* teachers, researchers and extensionists fell in low level of stress while teachers (18.68%), researchers (36.91%) and

Table 2 : Distribution of the scientists according to extent of factors contributing organizational stress (n=250)

Sr. No.	Factors	Category	Teachers (91)		Researchers (105)		Extensionists (54)	
			F	%	F	%	F	%
1.	Self	Low	35	38.46	24	22.86	15	27.78
		Medium	43	47.25	56	53.33	30	55.55
		High	13	14.28	25	23.81	9	16.67
2.	Spouse	Low	65	71.43	58	55.24	31	57.41
		Medium	17	18.68	38	36.91	16	29.63
		High	9	9.89	9	8.57	7	12.96
		Low	54	59.34	47	44.76	19	35.18
3.	Family	Medium	27	29.67	43	40.95	25	46.29
		High	10	10.99	15	14.28	10	18.52
		Low	75	82.42	60	57.14	23	42.59
4.	Social factors	Medium	11	12.09	31	29.52	15	27.78
		High	5	5.49	14	13.33	16	29.63
5.	Environmental factors	Low	48	52.75	48	45.71	13	24.07
		Medium	33	36.26	38	36.19	25	46.29
		High	10	10.99	19	18.09	16	29.63
6.	Organizational factors	Low	46	50.55	32	30.48	14	25.92
		Medium	32	35.16	50	47.62	21	38.89
		High	13	14.28	23	21.90	19	35.18
	Organizational culture	Low	55	60.44	49	46.67	16	29.63
7.		Medium	27	29.67	30	28.57	27	50.0
		High	9	9.89	26	24.76	11	20.37
8.	Role in organization	Low	53	58.24	40	38.09	22	40.74
		Medium	28	30.77	44	41.90	23	42.59
		High	10	10.99	21	20.0	9	16.67
9.	Interpersonal relationships at	Low	52	57.14	43	40.95	18	33.33
	work	Medium	30	32.97	44	41.90	26	48.15
		High	9	9.89	18	17.14	10	18.52
10.	Job contentment	Low	55	60.43	37	35.24	16	35.18
		Medium	29	31.87	48	45.71	19	35.18
		High	7	7.69	20	19.05	16	29.63
	Workload	Low	31	34.06	39	37.14	16	29.63
11.		Medium	46	50.55	52	49.52	22	40.74
		High	14	15.38	14	13.33	16	29.63
12.	Strict adherence to working	Low	49	53.85	29	27.62	19	35.18
	hours	Medium	20	21.98	50	47.62	19	35.18
		High	22	24.17	26	24.76	16	29.63
13.	Influence on career	Low	38	41.76	64	60.95	19	35.18
	development	Medium	46	50.55	38	36.19	25	46.29
		High	7	3.29	3	2.86	10	18.52
14.	Home-work interference	Low	50	54.94	42	40.00	25	46.29
		Medium	24	26.37	47	44.76	16	29.63
		High	17	18.68	16	15.24	13	24.07

extensionists (29.63%) had medium level of stress due to spouse. This may be due to the reason that self attitude affects the person positively or negatively which directly or indirectly contributes to the performance of the organization. But in the case of family, teachers (29.67% and 10.99%), researchers (40.95% and 14.28%) and extensionists (46.29% and

18.52%) had medium and high level of organizational stress, respectively. These findings are in agreement to those reported by Triveni *et al.* (2006).

It was noticed that from the data given in Table 2 that majority of the scientists from all the three cadres *i.e.* 82.42 per cent teachers, 57.14 per cent researchers and 42.59 per cent extensionists did not face stress problem due to social factors, respectively. On the other hand, 29.52 per cent researchers and 27.78 per cent extensionists had 'medium' level stress due to social factors whereas 29.63 per cent extensionists had 'high' level of stress due to social factors.

Further, it was reported that environmental factors lead to medium and high level of organizational stress, respectively as indicated by teachers (36.26% and 10.99%), researchers (36.19% and 18.09%) and extensionists (46.29% and 29.63%). The possible reason could be that the extensionists stayed away from their home, the head quarter and facilities such as xeroxing, library, many other facilities, etc. were not available to them.

With regard to the organizational factors, it was observed that 35.16 and 14.28 per cent teachers, 47.62 and 21.90 per cent researchers and 38.89 and 35.18 per cent extensionists had 'medium' and 'high' level of organizational stress, respectively. Fifty per cent and 20.37 per cent extensionsists, 28.57 and 24.76 per cent researchers and 29.67 and 9.89 per cent teachers had 'medium' and 'high' level of stress, respectively with regard to organizational culture. It may be due to the fact that the roles have already been assigned to teachers, researchers and extensionists which are mandatory for them to perform.

A perusal of the data presented in the Table 2 further indicated that an ample size of teachers (30.77% and 10.99%) researchers (41.90% and 20.0%) and extensionists (42.59% and 16.67%) had 'medium' and 'high' level of stress due to their role in the organization. In case of researchers, it may be due to the fact that they got recognitions and awards for their significant contributions to the innovative research technologies which can be clearly seen whereas extensionists were involved in the field work and did not carry overload work at home. About thirty three per cent and 9.89 per cent of teachers, 41.90 and 17.14 per cent researchers and 48.15 and 18.52 per cent extensionists had 'medium' and 'high' level of stress due to their interpersonal relationships at work place, respectively.

Further, a close look at the data presented in Table 2 pointed out that scientists had 'medium' and 'high' level of stress due to job contentment as indicted by teachers (31.87% and 7.69%), researchers (45.71% and 19.05%) and extensionists (35.18% and 29.63%), respectively. These findings are in line to those reported by Ansari (1991).

On the other hand, 50.55 per cent of teachers, 49.52 per cent researchers and 40.74 per cent extensionists had medium level of stress due to workload whereas 15.38 per cent teachers, 13.33 per cent researchers and 29.63 extensionists had high level of organizational stress due to workload. These findings are similar to those reported by Mubashir and Ghazal (2008).

A close examination of the data given in the Table 2 showed that, 21.98 and 24.17 per cent teachers, 47.62 and 24.76 per cent researchers and 35.18 and 29.63 per cent extensionists had medium and high level of stress in relation to working hours of the organization. This means that they did regard strict working hours as a factor causing stress. Further, 50.55 per cent teachers, 36.19 per cent researchers and 46.29 per cent extensionists had

Table 3 : Scientific productivity status in teaching stream **(n=250)**

Scientific productivity	Teachers (91)		Researchers (105)		Extensionists (54)	
	F	%	F	%	F	%
Low	32	35.16	50	47.62	18	33.33
Medium	36	39.56	41	39.05	28	51.85
High	23	25.27	14	13.33	8	7.62

Table 4 : Scientific productivity status in research stream **(n=250)**

Scientific productivity	Teachers (91)		Researchers (105)		Extensionists (54)	
	f	%	F	%	F	%
Low	31	34.06	37	35.24	31	51.41
Medium	45	49.45	44	41.90	15	27.78
High	15	16.98	24	22.86	8	14.81

Table 5: Scientific productivity status in extension stream **(n=250)**

Scientific productivity	Teachers (91)		Researchers (105)		Extensionists (54)	
	f	%	F	%	F	%
Low	42	46.15	54	51.43	19	35.19
Medium	34	37.36	27	25.71	22	40.74
High	15	16.48	24	22.86	13	24.07

'medium' level of stress due to influence on career development. This may be due the fact that the scientists are demotivated through demotion encounter block in the ways of career development. He/she will sap and it will lead to the low productivity of the scientists leading to lower performance of the organization .On the other hand, in case of home work interference, teachers (26.37% and 18.68%), researchers (44.76% and 15.24%) and extensionists (29.63% and 24.07%) reported 'medium' and 'high' level of stress. This indicated that the scientists got support from their home.

Scientific productivity of agricultural scientists in teaching:

The data given in Table 3 pointed out that *i.e.* 25.27, 13.33 and 7.62 per cent scientists belonged to high category of scientific productivity in teaching, research and extension, respectively whereas 39.56 per cent, 39.05 per cent and 51.85 per cent teachers, researchers and extensionists had medium level of teaching productivity, respectively. The similar findings have been reported by Jhansi (1985) and Laharia and Singh (1987).

Scientific productivity of agricultural scientists in research:

A close examination of the data given in Table 4 indicated that 16.98 per cent, 22.86 per cent and 14.81 per cent teachers, researchers, and extensionists, respectively had 'high' scientific productivity in research. On the other hand, 49.45 per cent teachers, 41.90 per cent researchers and 27.78 per cent extensionists had medium level of scientific productivity in research whereas 51.41 per cent of extensionists had low level of scientific productivity. These results are contradictory to those reported by Manjunath (2008 a).

Scientific productivity of agricultural scientists in extension:

A perusal of data presented in Table 5 showed that 37.36, 25.71 and 40.74 per cent teachers, researchers and extensionists, respectively had medium level of scientific productivity in extension. On the other hand, 16.48 per cent teachers, 22.86 per cent researchers and 24.07 per cent extensionists had high level of extension, productivity. These results are supported by the findings of Godra *et al.* (2006).

Conclusion:

Scientific productivity of the agricultural scientists working in PAU, Ludhiana is medium, it is necessary to bring the scientists to the high level of scientific productivity through capacity building as per their needs. Hence, the courses in advanced technologies/methodologies for teaching, research and extension should be organized periodically to update the knowledge and skills of the scientists of all the three cadres (teaching, research and extension). So, special attention should be given to the organizational stress dimensions: personal factors, organizational factors, organizational culture, role in organization, interpersonal relationships at work, workload and working hours in order to improve the scientific productivity of the scientists.

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