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Statistical Approach for the Analysis of Stress of Working Women

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Abstract: ***The present paper deals with the analysis of the occupational stress of the working women using t and F statistics. We test the significance of the difference between the means and variances of the stress of working women with respect to certain demographic factors of the three districts of Karnataka state using t and F statistics. To test the equality of means and variances of the stress, the variables considered are age, monthly income, monthly savings and travel time and the demographic factors area, education family type and residence type of the respondents. The research finding reveals that the test of equality of means and variances of age, monthly income, monthly savings and travel time of the respondent's shows in most of the cases there is significant difference with respect to demographic factors.***

Keywords: Working women, Area, Stress Factors, Demographic Factors, t-test and F-test

1. Introduction

Occupational stress is a major hazard for many workers. Stress is an integral part of everyday life and simply cannot be avoided. Occupational stress and workplace have become issues of great concern over the last decade, both internationally and nationally. Work is an essential aspect of human existence; workplace stress is very common occurrence in the modern world. People encounter stressful stimuli many times a day in their personal and social domains in their workplace. Medical dictionary defines stress as "the result produced when a structure, system or organism is acted upon by forces that disrupt equilibrium or produce strain".

The present study is aimed to analyze the occupational stress of working women participating in various types of occupation in three districts viz; Bagalkot, Vijayapur and Belagavi of Karnataka State (C.P.S.Hungund et..al, [**2**]) using t-test and F test. These tests are most powerful tests used to examine the significance difference in the level of stress of rural and urban working women with respect demographic factors area, education, family type and residence type. Hence in the following section, we test the significance of means and variances of the variables actual age, actual monthly income, actual monthly savings and actual time for travelling with respect to demographic factors area, family type, residence type and education of the respondents by using t-test and F- test. The data was analyzed through SPSS software.

2. Review of Literature

Gupta and Kumar[1] examined the relationship between mental health with emotional intelligence and self efficacy among college students 200 participate (male and female) were drawn from science and arts streams of Kurukshetra University, Kurukshetra. Data analysis was done through correlation and t-test, the result indicates that emotional intelligence and self-efficacy are positively correlated with mental health. It also revealed that male students were better than female in terms of mental health, emotional intelligence and self-efficacy which underline the importance of training in emotional intelligence, self efficacy and mental health for female college students.

Majid Mohammad [3] the study investigated the correlation between emotional intelligence and mental health of education managers in the Khoy city Iran. The sample consist 150 (male and female) executives by SRS method, it was found that there was no difference in emotional intelligence and mental health between male and female education managers. There is no difference between components of emotional intelligence and coconsciousness in relation to mental health.

3. Data Collection and Methods

Primary data was collected through questionnaire, observation and interviews. Among the total 500 samples 330 (66%) working women belongs to urban area and 170 (34 %) are from rural area. The district wise statistical analysis reveals that 54% of working women are from Bagalakot , 26% are from Vijayapur and 20% of working women belongs to Belagavi. Student-t and F- tests were used to analyse the data.

4. Test of significance of means and variances based on demographic factors

In this section we test the significance of means and variances of the variables actual age, actual monthly income, actual monthly savings and actual time for travelling of the respondents with respect to demographic factors area, family type, residence type and education of the respondents by using t- test and F- test. In all the cases the null hypotheses to be tested is there is no significant difference between means and variances of the variables with respect to demographic factors of the respondents.

4.1 Tests for significance of means and variances with respect to area

The descriptive statistics of actual age, actual monthly income, actual monthly savings and actual travel time with respect to area of the respondents are presented in the following table.

Table 4.1 (a): Descriptive Statistics of Rural and Urban Working Women

Variables	Area	N	Mean	Std. Deviation	Std. Error Mean
Actual age (year)	Rural	170	38.1118	8.73708	.67010
	Urban	330	41.6515	9.57849	.52728
Actual income(Rs.)	Rural	170	10367.6471	7572.09610	580.75326
	Urban	330	16111.6970	14667.05067	807.39457
Actual savings(Rs.)	Rural	170	1880.1765	1649.68115	126.52477
	Urban	330	2960.6152	2744.35545	151.07180
Actual travel time (min)	Rural	170	28.9647	15.32562	1.17542
	Urban	330	32.2242	12.68455	.69826

Table 4.1 (b): Independent Sample - Test

		Levene's Test for Equality of Variances		t - test for Equality of Means		
		F	Sig	| t |	df	sig(two tail)
Actual Age	Equal variances assumed	3.526	0.0611	4.031	498	0.0001
	Equal variances not assumed			4.151	370.167	0.0001
Actual income	Equal variances assumed	27.063	0.0001	4.787	498	0.0001
	Equal variances not assumed			5.775	497.994	0.0001
Actual savings	Equal variances assumed	32.631	0.0001	4.712	498	0.0001
	Equal variances not assumed			5.483	486.468	0.0001
Actual Travel time	Equal variances assumed	4.880	0.0281	2.532	498	0.0121
	Equal variances not assumed			2.384	290.728	0.0181

From the above table t- test for equality of means, reveals that in all the cases the significant values is less than 0.05, hence we reject the null hypotheses. Which indicates that, there is a significant difference between rural and urban working women with respect to actual age, actual monthly income, actual monthly savings and actual travel time of the working women.

The equality of variance is also tested using F-test. The analysis reveals that for the variables actual income, actual savings and actual travel time the significant value is less than 0.05, hence we reject the null hypotheses. Which indicates that there is a significant difference between rural and urban working women with respect to their actual income, actual savings and actual travel time. But in the case of actual age null hypothesis is accepted, which means that there is no significant difference between rural and urban area working women.

4.2 Tests for significance of means and variances with respect to family type

The descriptive statistics of actual age, actual monthly income, actual monthly savings and actual travel time with respective family type of the respondents are presented in the following table.

Table 4.2 (a): Descriptive Statistics of Family type of the Respondents

Variables	Family Type	N	Mean	Std. Deviation	Std. Error Mean
Actual age (year)	Single	370	41.0568	9.25340	.48106
	Joint	130	38.7154	9.79181	.85880
Actual income (Rs.)	Single	370	15614.7568	14205.04567	738.48516
	Joint	130	10014.6154	7202.53090	631.70375
Actual savings (Rs.)	Single	370	2830.8730	2677.84020	139.21428
	Joint	130	1917.0000	1629.14809	142.88574
Actual travel time (min)	Single	370	31.4324	12.43594	.64651
	Joint	130	30.2154	16.84677	1.47756

Table 4.2 (b): Independent Samples–Test

		Levene's Test for Equality of Variances		t - test for Equality of Means		
		F	Sig	| t |	df	sig(two tail)
Actual Age	Equal variances assumed	1.490	.223	2.444	498	.015
	Equal variances not assumed			2.379	215.246	.018
Actual income	Equal variances assumed	25.787	.0001	4.303	498	.0001
	Equal variances not assumed			5.763	437.118	.0001
Actual savings	Equal variances assumed	26.253	.0001	3.659	498	.0001
	Equal variances not assumed			4.581	372.735	.0001
Actual travel time	Equal variances assumed	13.894	.0001	.870	498	.385
	Equal variances not assumed			.755	180.807	.451

The t- test for equality of means reveals that, significant values for the cases age , monthly income and monthly savings is less than 0.05, hence we reject null hypotheses. Which indicates that there is a significant mean difference between actual age, actual income and actual savings with respect to single and joint family type of the respondents. But significant value for travel time is more than 0.05, hence we accept the null hypothesis. It reveals that there is no significant mean difference between travel time and family type of the respondents.

The F-test for equality of variance reveals that, for the variables actual income, actual savings and actual travel time the significant value is less than 0.05, hence we reject the null hypotheses. Which indicates that there is a significant difference between single and joint family working women with respect to their actual income, actual savings and actual travel time. But in the case of actual age null hypothesis is accepted, which means that there is no significant difference between family type of the working women.

4.3 Test for significance of means and variance with respect to residence type

The descriptive statistics of actual age , actual monthly income , actual monthly savings and actual travel time with respective residence type own house and rented house of the respondents are presented in the following table.

Table 4.3 (a): Descriptive Statistics of Residence Type of the Respondents

Variable	Residence type	N	Mean	Std. Deviation	Std. Error Mean
Actual age (Year)	Own house	215	40.5256	9.18084	.62613
	Rented	235	40.0596	9.32123	.60805
Actual income (Rs.)	Own house	215	13595.3488	12700.14264	866.14254
	Rented	235	13124.5106	11061.86477	721.59649
Actual savings (Rs.)	Own house	215	2475.4419	2644.59149	180.35964
	Rented	235	2428.5660	2190.71680	142.90661
Actual travel time (min)	Own house	215	31.0326	14.86776	1.01397
	Rented	235	29.9489	12.79680	.83477

Table 4.3 (b): Independent Samples - Test

		Levene's Test for Equality of Variances		t - test for Equality of Means		
		F	Sig	| t |	df	sig(two tail)
Actual Age	Equal variances assumed	.191	0.662	0.534	448	0.594
	Equal variances not assumed			0.534	445.560	0.594
Actual income	Equal variances assumed	2.886	0.090	0.420	448	0.675
	Equal variances not assumed			0.418	426.331	0.676
Actual savings	Equal variances assumed	2.251	0.134	0.205	448	0.837
	Equal variances not assumed			0.204	416.808	0.839
Actual travel Time	Equal variances assumed	3.433	0.065	0.831	448	0.407
	Equal variances not assumed			0.825	424.186	0.410

The t-test for equality of means reveals that significant values in all the cases age, income ,savings and travel time are more than 0.05, hence we accept the null hypotheses. It reveals that there is no significant mean difference between actual age, actual income , actual savings and actual travel time with respect to residence type own house and rented house of the respondents.

The F-test for equality of variance reveals that, in all the cases actual age, actual income, actual savings and actual travel time the significant value is more than 0.05, hence we accept the null hypotheses. Which indicates that there is no significant difference between residence type own house and rented house of the working women with respect to their actual age , actual income, actual savings and actual travel time.

4.5 Test for significance of means and variances with respect to education

The descriptive statistics of actual age, actual monthly income, actual monthly savings and actual travel time with respect to educational qualifications Primary/SSLC and PUC/Degree of the respondents are presented in the following table.

Table 6.12.5 (a): Descriptive Statistics of Education of the Respondents

Variable	Educational qualifications	N	Mean	Std. Deviation	Std. Error Mean
Actual age (Year)	Pri/ SSLC	169	43.3728	7.72732	.59441
	PUC/ Degree	260	38.1308	9.71317	.60239
Actual Income (Rs.)	Pri/ SSLC	169	6033.1361	2604.75120	200.36548
	PUC/ Degree	260	15873.6923	12386.86573	768.20080
Actual Savings (Rs.)	Pri/ SSLC	169	1064.9112	860.36614	66.18201
	PUC/ Degree	260	2916.8577	2292.16524	142.15405
Actual Travel time (Min)	Pri/ SSLC	169	28.6686	13.84597	1.06507
	PUC /Degree	260	32.5192	14.04968	.87132

Table 6.12.5 (b): Independent Samples – Test

		Levene's Test for Equality of Variances		t - test for Equality of Means		
		F	Sig	| t |	df	sig(two tail)
Actual Age	Equal variances assumed	16.271	.0001	5.905	427	0.0001
	Equal variances not assumed			6.194	409.862	0.0001
Actual income	Equal variances assumed	105.129	.0001	10.178	427	0.0001
	Equal variances not assumed			12.395	293.345	0.0001
Actual savings	Equal variances assumed	106.428	.0001	10.050	427	0.0001
	Equal variances not assumed			11.811	357.548	0.0001
Actual travel Time	Equal variances assumed	.071	.7901	2.790	427	0.0061
	Equal variances not assumed			2.798	362.734	0.0051

The t- test for equality of means reveals that , significant values in all the cases actual age, actual income actual savings and actual travel time are less than 0.05, hence we reject the null hypotheses. Which indicates that there is a significant mean difference between actual age, actual income, actual savings and actual travel time with respect to the educational qualifications Primary/SSLC and PUC/Degree of the respondents.

The F-test for equality of variance reveals that, in the cases of actual age, actual income, actual savings the significant values are less than 0.05, hence we reject the null hypotheses. Which indicates that there is a significant difference between the educational qualifications with respect to their actual age, actual income, actual savings. But in the case actual travel time, significant value is more than 0.05, hence we accept the null hypothesis. Which indicates that there is no significant difference between the actual age and educational qualifications Primary/SSLC and PUC/Degree of working women.

5. Conclusion

The consolidated results and conclusions drawn on the basis of results obtained using t and F- tests are presented in the following table.

S. No	Null hypotheses for testing the difference of means and variances.	t-value	Result	F-value	Result
1.	There is no significant difference between age and area.	4.03	Reject	3.52	Accept
2	There is no significant difference between monthly income and area.	4.78	Reject	27.06	Reject
3	There is no significant difference between monthly savings and area.	4.71	Reject	32.63	Reject
4	There is no significant difference between travel time and area.	2.53	Reject	4.88	Reject
5	There is no significant difference between age and family type.	2.44	Accept	1.49	Accept
6	There is no significant difference between monthly income and family type.	4.30	Reject	25.78	Reject
7	There is no significant difference between monthly savings and family type.	3.65	Reject	26.25	Reject
8	There is no significant difference between travel time and family type.	0.87	Reject	13.89	Reject
9	There is no significant difference between age and residence type.	0.534	Accept	0.191	Accept
10	There is no significant difference between monthly income and residence type	0.420	Accept	2.88	Accept
11	There is no significant difference between monthly savings and residence type.	0.205	Accept	2.25	Accept
12	There is no significant difference between travel time and residence type.	0.831	Accept	3.43	Accept
13	There is no significant difference between age and education level. (Primary/SSLC and PUC/Degree).	5.90	Reject	16.27	Reject
14	There is no significant difference between monthly income and education level. (Primary/SSLC and PUC/Degree).	10.17	Reject	105.12	Reject
15	There is no significant difference between monthly savings and education level. (Primary/SSLC and PUC/Degree).	10.05	Reject	106.42	Reject
16	There is no significant difference between travel time and education level. (Primary/SSLC and PUC/Degree	2.79	Reject	0.071	Accept

From the above table it reveals that there is significant difference in monthly income , monthly savings and time for travel of the working women with respect to area viz; rural and urban and type of family viz; single and joint family.

The equality test of two population means and variances of the variables age , monthly income , monthly savings and time for travel with respect to residence type of the working women viz; own house and rented house reveals that there is no significant difference between own house and rent house of the working women in all the cases.

The test for equality of two population means and variances of the variables age , monthly income, monthly savings and time for travel with respect to educational qualifications of the working women viz; Primary/SSLC and PUC/Degree, t-test reveals that in all the cases there is significant mean difference between the qualifications primary/SSLC and PUC/Degree of the working women.

F –test reveals that there is significant difference in the variances for the cases age, monthly income and monthly savings of working women.

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