

## EFFECT OF PHYSICAL ACTIVITY AND PSYCHOLOGICAL STATE ON BODY COMPOSITION IN WORKING AND NON-WORKING WOMEN OF LOWER MIDDLE-INCOME GROUP

Dr. Rekha Battalwar<sup>1</sup> and Sumayya Khan<sup>2</sup>

<sup>1</sup>Associate Professor, Department of Food, Nutrition and Dietetics, Sir Vithaldas Thackersey College of Home Science (Autonomous), S.N.D.T. Women's University, Juhu Tara Road, Mumbai, India, 400049

<sup>2</sup>Student of Master's of Science in Dietetics and Food Science Management, IGNOU, New Delhi

---

**ABSTRACT:** *Background: This research was conducted to study the effect of physical activity and psychological state on body composition in working and non-working women. Methods: A cross-sectional study was conducted in 149 females (75 working and 74 non working) aged 32.4±5.6 years from lower middle income group, Mumbai city. Anthropometry and body fat were measured. Psychological status was assessed using structured questionnaire and total psychological score was calculated by scoring 1 for every positive emotion. Analyses were performed using SPSS software for Windows (version 16.0, 2007, SPSS Inc, Chicago, IL). Data was presented using Independent Sample T-test, cross tabulations, chi-square test, Pearson's correlation and Univariate analysis. P-value < 0.05 was considered to be statistically significant. Results: There was no significant difference in anthropometry or body fat of working and non-working women ( $p>0.05$ ). 79.9% women had many things in life to be grateful, 34% had long list of everything to be thankful, 65.1% looked around and were grateful, 40.3% were grateful to wide variety of people, 65.1% took part in family decision making, 35.6% were member of social community, 57.7% liked to go to religious place, 81.9% had hobbies and 48.3% still indulged in hobbies while 65.8% felt lonely/depressed and 21.5% took anti-depressant drugs. The mean psychological state score of working women ( $7\pm1.7$ ) was significantly higher than that of non-working women ( $5.9\pm1.9$ ) ( $p=0.001$ ). There was significant association of work status and activity level with higher percentage of non-working women been non-active as compared to working women ( $\chi^2=13.460, p=0.004$ ). There was no significant difference in psychological state and activity level adjusted BMI and body fat of working and non-working women ( $p>0.05$ ). Conclusion: Psychological and physical activity differed in working and non-working women. However, psychological state and physical activity does not influence BMI or body fat in working and non-working women of Mumbai city.*

**KEYWORDS:** Activity Level, Psychological State, Working Women, Non-Working Women, Body Fat, Anthropometry, Body Composition.

---

### INTRODUCTION

The growth in the number of working women families is widely acknowledged to be one of the most important social trends of the era. Yet little attention has been paid to examining its implications on physical activity, psychological health and its effect on body composition in women. The study outlined in this paper was intended to explore this issue, and in particular a comparison with non-working women.

Indian women have been gradually coming out of traditional roles and entering into the male dominated areas. In recent years the role and status of the women have been changed tremendously. Rastogi and Kashyap (2001) reported that significant negative relationship existed between occupational stress and mental health among married employed in teaching, nursing and clerical jobs. The sources of stress for working and non-working women are heavy workload, lack of co-operation from colleagues or neighbours and negative community attitude. Ojha and Rani (2004) observed significant negative correlations between life stress and positive self-evaluation and between life stress and integration of personality among working and non-working women. Bearing the above facts in mind a study was undertaken to compare the physical activity and mental health status of working and non-working women and their effect on body composition. Jo Ellen Vrazel, et al (2008) review reveals the complex range of factors in the social environment that influence women. Carole K. Holahana et al (2011) research shows Physical activity in early midlife has important implications for women's health. A Factor Analytic Study by Larry A. Tucker et al (2015) was to identify independent patterns of diet using factor analysis to determine the extent to which dietary patterns account for differences in body fat percentage (BF%) and body mass index (BMI). These findings support an association between dietary patterns and body composition. Dietary patterns reflect the complex interrelationships inherent in day-to-day eating and are strongly related to differences in BF% and BMI in women. A study conducted by Rebecca E. Lee et al (2012) indicated that group cohesion interventions may have psychological and physical health benefits for African-American and Hispanic or Latina women.

There is growing evidence from developed countries that physical activity is associated with better mental health. The purpose of this research study is also to explore the relationship between physical activity and symptoms of mental ill-health in a large, well defined and heterogeneous sample of working and non working women. Mental ill-health, particularly depression and anxiety, is a leading and increasing cause of disability worldwide, especially for women. A study conducted by Amanda Griffiths (2014) adds to the evidence for the protective effect of physical activity for later mental health in women. It also suggests that increasing physical activity levels may be beneficial in terms of mental health among mid-life and older women.

K Fujishiro et al (2015) Using data from over 52 000 working women compared the association between change in job strain and change in body mass index (BMI) across different levels of baseline BMI. Women with higher BMI may be more vulnerable to BMI gain when exposed to constant work stress. Future research focusing on mediating mechanisms between job strain and BMI change should explore the possibility of differential responses to job strain by initial BMI.

Working women are more prone to mental and physical tiredness. Preeti Singh and Anu Pandey (2005) published a paper "Women in Call Centres" in 'Economic & Political Weekly'. This study looks at aspects of employment of women in call centres in India, based on a survey of 100 women employees. It examines the recent phenomenon of women working in night shifts, as well as the impact of call centre employment on women's health, family life and decision-making powers. The study finds a direct and adverse effect of night shift employment on the health of women.

Non working women with sedentary life style and no change and newness in the work are more prone to get stressed out as compared to non working women. A study conducted by Devi Kanta (2016) to compare the level of stress and association among working and non-working

women residing in Chandigarh revealed that the stress level was higher in non-working women as compared to working women.

**Results:** Data on 149 females (75 working) aged  $32.4 \pm 5.6$  years is presented in the current study.

### Anthropometry and body fat:

The mean height of the women was  $160 \pm 8.8$  cm, weight was  $64.2 \pm 13.3$  kg and BMI was  $22.2 \pm 4.4$  kg/m<sup>2</sup>. The mean body fat percentage was  $24.1 \pm 5.4\%$  and visceral fat was  $8.4 \pm 5.8$  kg. Table 1 gives anthropometric measurements and body fat details of the women when classified according to work status. As seen in Table 1, there was no significant difference in anthropometry or body fat of the working and non-working women ( $p > 0.05$ )

**Table 1:** Anthropometric measurements and body fat details of the women when classified according to work status

	Working Women (n=75)	Non-working women (n=74)	P value
Age (years)	$32.4 \pm 5.5$	$32.6 \pm 5.7$	0.821
Height (cm)	$161.1 \pm 8.9$	$158.9 \pm 8.7$	0.227
Weight (kg)	$62.9 \pm 12.5$	$65.5 \pm 14.1$	0.227
BMI (kg/m <sup>2</sup> )	$22.1 \pm 4.6$	$22.4 \pm 4.3$	0.686
Body fat (%)	$23.6 \pm 5.6$	$24.6 \pm 5.1$	0.271
Visceral fat (kg)	$8.3 \pm 5.6$	$8.6 \pm 6.0$	0.742

Data presented as Mean $\pm$ SD

### Psychological State

Of the 149 women, 119 (79.9%) women had many things in life to be grateful, 64 (34%) had a long list of everything to be thankful for, 97 (65.1%) looked around and saw much to be grateful for, 60 (40.3%) were grateful to a wide variety of people, 97 (65.1%) took part in decision making with family, 53 (35.6%) were a member of a social community, 86 (57.7%) liked to go to temple or any other religious place, 122 (81.9%) had hobbies and 72 (48.3%) still indulged in hobbies while 98 (65.8%) felt lonely or depressed and 32 (21.5%) took anti-depressant drugs. A research conducted by Irfan. M (2012) to find out whether the anxiety level has any significant impact on the life satisfaction of the working and non-working married women show that females those who are working and married, are low on anxiety with higher life satisfaction in comparison to the non-working married females. They perceived their life as challenging and secure. They feel comfortable with their life situations. Whereas, the non-working married females are less satisfied with their lives and their anxiety level is also higher than the anxiety level of working females.

Table 2 gives information of psychological state of women when classified according to work status. As seen in Table 2, significantly higher percentages of working women had many things in life to be grateful, had a long list of everything to be thankful for, were grateful to a wide variety of people, took part in decision making with family, were a member of a social community and had hobbies as compared to non-working women ( $p < 0.05$ ). On the hand, significantly higher percentage of non-working women liked to go to temple or any other

religious place, felt lonely or depressed and took anti-depressant drugs as compared to working women ( $p < 0.05$ ) (Table 2). A research conducted by Revti. R (2012), the main purpose of this research was to find out the mean difference between working and non-working women in mental health and depression. The total sample consisted 80 women were taken. Results revealed that significant difference in mental health and depression with respect to both working and non-working women on mental health and depression.

There was no significant difference in the number of working and non-working women who looked around and saw much to be grateful for and who still indulged in hobbies ( $p > 0.05$ ) (Table 2). A study conducted on the health status of working and non working women shows that working women showed less scores of emotional health when compared with nonworking women ( $p = 0.16$ ), which was statistically not significant. Overall, the general health scale was considerably less in working women when compared with nonworking women ( $p = 0.54$ ). Working women revealed significantly less scores of mental health when compared with nonworking women. V B Suman, Pratik Chatterjee (2015).

**Table 2:** Psychological state of women when classified according to work status

	Working Women (n=75)	Non-working women (n=74)	$\chi^2$ value	P value
Had many things in life to be grateful	69 (92)	50 (67.6)	13.828	0.001*
Had a long list of everything to be thankful for	40 (53.3)	24 (32.4)	6.641	0.010
Looked around and saw much to be grateful for	52 (69.3)	45 (60.8)	1.191	0.275
Were grateful to a wide variety of people	36 (48)	23 (32)	3.752	0.050
Took part in decision making with family	63 (84)	34 (45.9)	23.741	0.001*
Were a member of a social community	38 (50.7)	15 (20.3)	15.017	0.001*
Liked to go to temple or any other religious place	29 (38.7)	57 (77)	22.460	0.001*
Had hobbies	66 (88)	56 (75.7)	3.813	0.050
Still indulged in hobbies	32 (42.7)	40 (54.1)	1.934	0.164
Felt lonely or depressed	41 (54.7)	57 (77)	8.273	0.004*
Took anti-depressant drugs	9 (12)	23 (31.1)	8.024	0.005

Data presented as frequency (percentage) \* denotes  $p < 0.005$

A total psychological state score was developed by rating women 1 if they reported yes to psychological state questions except for felt lonely or depressed and took antidepressant drugs (they were scored 1 if they reported no for these questions). Figure 1 gives percentage of women having different score for psychological state. As seen in Figure 1, the highest score of was that of 10 and the lowest score was that of 2.

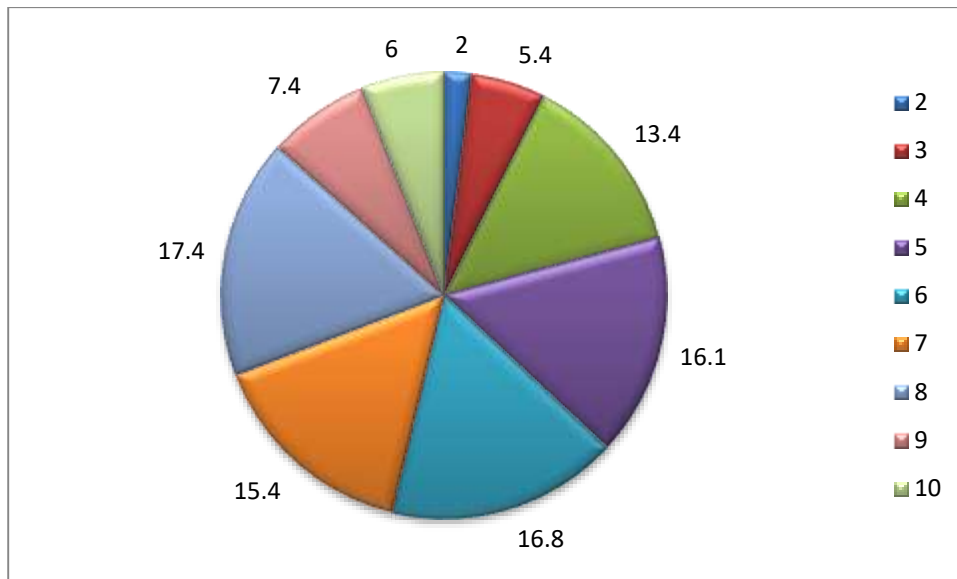


Figure 1: Percentage of women having different psychological score

#### Data presented as percentage

The mean psychological state score of working women was  $7 \pm 1.7$  and was significantly higher than mean psychological score of non-working women ( $5.9 \pm 1.9$ ) ( $p=0.001$ ). A study aimed at investigating the decision making process among working and non working women indicated that working women jointly with their husband make more decisions regarding daily expenses, personal expenses, savings etc as compared to non working women. Vipul k et al (2015) Journal of psychosocial research.

#### Physical activity:

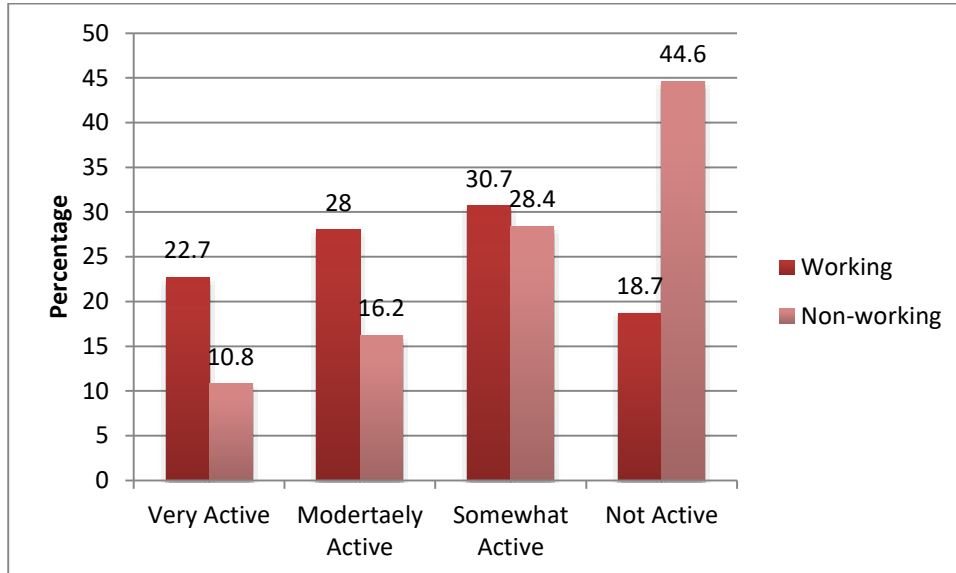
Of the 149 women, 23 (15.4%) performed yoga, 25 (16.8%) performed meditation, 103 (69.1%) walked, 5 (3.4%) performed aerobic exercises, 6 (4%) swim and 99 (66.4%) indulged in household activity. Table 3 gives various physical activity performed by women when classified according to work status. As seen in Table 3, significantly higher percentage of non-working women indulged in household activity as compared to working women ( $p<0.05$ ). There was no difference in the percentage of working or non-working women performing other physical activity ( $p>0.05$ ) (Table 3). The study was conducted with 618 adult females from Delhi in the age range of 25-65 years BMI was assessed and exhaustive information on physical activity, dietary habits and working status was collected. It was found that physical inactivity was one of the attributing factors and a host of possible confounding factors in the causation of obesity and its related metabolic disturbances. Rashmi sinha (2016) International Educational Scientific Research Journal.

**Table 3:** Various physical activities performed by women when classified according to work status

	Working Women (n=75)	Non-working women (n=74)	$\chi^2$ value	P value
Yoga	13 (17.3)	10 (13.5)	0.416	0.519
Meditation	14 (18.7)	11 (14.9)	0.386	0.535
Walk	50 (66.7)	53 (71.6)	0.429	0.513
Aerobic exercise	3 (4)	2 (2.7)	0.193	0.660
Swim	3 (4)	3 (4.1)	0.000	0.987
Household activity	34 (45.3)	65 (87.8)	30.182	0.001*

Data presented as frequency (percentage) \* denotes  $p < 0.005$

Based on the activities performed, women were classified as very active [25 (16.8%)], moderately active [33 (22.1%)], somewhat active [44 (29.5%)] and not active [47 (31.5%)]. Figure 2 gives activity level of women when classified according to work status. There was a significant association of work status and activity level with higher percentage of non-working women been non-active as compared to working women ( $\chi^2=13.460$ ,  $p=0.004$ )



Data presented as percentage

### Effect of psychological state and physical activity

The effect of psychological state score and activity level on BMI, body fat and visceral fat was analyzed (Table 4). As seen in Table 4, there was no significant difference BMI, body fat and

visceral fat of the working and non-working women indicating that psychological state and activity level did not have an effect on body fat of the women ( $p>0.05$ ).

**Table 4:** Psychological state score and activity level adjusted parameters

	Working	Non-working	P value
BMI (kg/m <sup>2</sup> )	22.3±0.5	22.2±0.57	0.985
Body Fat (%)	23.9±0.61	24.3±22.9	0.607
Visceral fat (kg)	8.83±0.64	8.48±0.72	0.873

Data presented as Mean±SE

## CONCLUSION

Following conclusions can be drawn from the present study:

- ✓ Significantly higher percentages of working women had many things in life to be grateful, had a long list of everything to be thankful for, were grateful to a wide variety of people, took part in decision making with family, were a member of a social community and had hobbies as compared to non-working women ( $p<0.05$ )
- ✓ On the hand, significantly higher percentage of non-working women liked to go to temple or any other religious place, felt lonely or depressed and took anti-depressant drugs as compared to working women ( $p<0.05$ )
- ✓ There was a significant association of working status and psychological score with higher percentage of working women being more happy and content with a psychological score of 6 or more as compared to non-working women ( $p<0.05$ ) The mean psychological state score of working women was  $7\pm1.7$  points and was significantly higher than mean psychological score of non-working women ( $5.9\pm1.9$  points) ( $p=0.001$ )

## REFERENCES

- Amanda G. Anne K. Jaana P. Tuula O. Marianna V. Paula S. Ari V. Mika K. Jussi V. (2014). European Journal of Public Health. pages 813-818
- Carole K. Holahana, Charles J. Holahanb, Katherine E. Velasqueza, Sooin Junga, Rebecca J. Northb & Sandra A. Pahlb(2011) Women & Health. Volume 51, Issue 7, pages 661-675
- Devi K.(2016) International Journal of Innovative Research and Development ISSN 2278–0211 5.5
- Fujishiro K. Lawson C. Hibert E. Chavarro J. Rich E. (2015) International Journal of Obesity. Volume 39. pages 1395–1400
- Irfan M. Kaur N. Panwar N., Thind H. S. (2012) Indian Journal of Psychology & Mental Health. Volume 6, issue 2, pages 169-178.
- Jo Ellen Vrazel, Ruth P. Saunders, and Sara Wilcox (2008) American Journal of Health Promotion. Vol. 23, No. 1, pp. 2-12.

- Ojha, Sandhya, and Urmilla Rani (2004) "A comparative study of the level of life stress and various dimension of mental health among working and non-working Indian women." J. com. Guid. Res 21.3 page 297-303.
- Preeti Singh and Anu Pandey (2005): Women in Call Centres. Economic & Political Weekly. Pages 684-689.
- Rashmi sinha (2016) International Educational Scientific Research Journal. Vol 2. No. 7
- Rastogi, Renu, and Kavita Kashyap (2001) "A study of occupational stress and mental health among married working women." J. Com. Guid. Res 18.2 189-196.
- Rebecca E. Lee, Daniel P. O'Connor, Renae Smith-Ray, Scherezade K. Mama, Ashley V. Medina, Jacqueline Y. Reese-Smith, Jorge A. Banda, Charles S. Layne, Marcella Brosnan, Catherine Cubbin, Tracy McMillan, and Paul A. Estabrooks (2012) American Journal of Health Promotion. Vol. 26, No. 4, pp. e116-e125.
- Revati R. Dudhatra, Dr. Yogesh A Jogsan (2012) International Journal of Scientific and Research Publications, Volume 2, Issue 8.
- Tucker A, Jared M. Tucker, Bruce W, Bailey and James D, Le Cheminant (Mar 2015) American Journal of Health Promotion. Vol. 29, No. 4 pp. e136-e146
- V B Suman, Pratik Chatterjee (2015). Int J med sci public health. Vol 4. Pp 1489-1492
- Vipul K, Maral P. (2015) journal of psychosocial research. Vol.10 no.1 pp 73-82.