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EFFECT OF EMPLOYMENT STATUS OF MOTHER ON THE BODY MASS INDEX OF THE PRE-SCHOOL CHILDREN

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ABSTRACT

Objective behind the study was to compare the Body Mass Index of the children of employed and unemployed women. Children aged between 2-5 years from the pre-schools of Ajmer city, 80 of employed women and 80 children of un-employed women were selected through simple random sampling method. The socio-economic data was collected through questionnaires. Anthropometrical measurements current height, weight of the child was obtained by using standardized tools. For anthropometrical data, a table was created in a relational basis in MS Excel and 'WHO Anthro' software was used to analyse. The parameters of body mass index for children of unemployed and employed mother's shows that BMI were slightly more in children of employed mother's in comparison to un-employed mothers. With our observation & discussion it is concluded that the BMI were better in employed mother's children in comparison to un-employed mother's children.

Keywords: *Body Mass Index, Employed Mothers, Un-employed Mothers, Pre-school Children, Anthropometry*

INTRODUCTION

Although women in developing countries spend great amount of time in either subsistence labor, wage labor, or both, and carry the major responsibilities for domestic work and child care (Coreil, 1991; Engel *et al.*, 1997), studies which have considered the impact of maternal work on child nutritional status have produced inconsistent findings. In part this is because the process of infant and child feeding can significantly affect the whole household as well as being influenced by the behavioural patterns and economic circumstances associated with maternal employment (Behrman *et al.*, 1987), and the extent to which the health and nutritional status of the caregiver influences care giving capacity (Winkvist, 1995).

Number of studies found, there were a link between childhood obesity and mothers who work. Most studies showed higher prevalence of childhood obesity were among employed mothers compared to unemployed mothers. This was supported by a study done by Araneo (2008) who revealed that full-time employment mothers had higher probability of the child being overweight. Whereas, Morrissey *et al.*, (2011) claimed that increased length of working hours were found to be associated with an increase in their child's BMI. Feeding practices play a vital role in determining child health and food preferences in later life. Better child nutritional status was also associated with better educational achievement among children in Malaysia (Shariff *et al.*, 2000). As more and more women are being forced to take up work in the unorganized sector, the real challenge is to ensure that the laws and schemes (including child care) that exist (at least on paper) for the women workers in the organized sector are extended to this vast majority.

Aims and Objectives

The aim of this study was to compare the BMI of the children of employed and unemployed women as assessed by using selected anthropometric index BMI for age with the WHO standards for growth (2006).

MATERIALS AND METHODS

This was a cross sectional descriptive study which was carried out in 6 randomly selected pre-school of Ajmer city, Rajasthan, India after obtaining the appropriate ethical clearance. There was two study groups, first group (n=80) of children 2-5 years whose mothers were at least 10th standard pass/appeared,

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aged between 18-40 years, engaged in work at least 6 hours per day outside home for at least last 6 months regularly. Second group (n=80) of children taken care by his/her own un-employed mother. Women who were Pregnant and lactating, belonging to joint family, having major medical disorders like tuberculosis, and mothers whose children attended by baby sitter, siblings registered in same pre-school, having medical disorders such as asthma, congenital heart diseases, DM etc. was not included in study. To compare the nutritional status standard anthropometrical data were collected using following tools.

Table 1: Tools for data collection:

| Indicator | Procedure |
|--------------------------------------|----------------------------|
| Demographic/Socioeconomic variables. | Structured questionnaire |
| Weight | Digital Bathroom Scale |
| Height | Tailoringtape /Stadiometer |

Assessment Methods: A prior formal permission was obtained from the Preschool authority for conducting the study. Informal consent from the mothers was taken by explaining the purpose and objectives of the study. Data was collected using structured demographic questionnaire administered to the mothers to assess the demographic status and structured questionnaire to assess the Growth among children of working and non-working mothers whose children were in preschool. There were no invasive procedures done.

The following data was collected on all the children:

- Socio-economic data
- Anthropometric data (Height, Weight)

Information on the socio- economic profile was collected using a structured questionnaire on information regarding age, sex, religion, family members, parent's education and occupation, per month income etc. Information on date of birth of children was verified from the school records. Some socio economic information like income, occupation of parents was also available in school records. Anthropometric data was collected using WHO standard.

Statistics: The six schools finalized for this study were primarily based on the cooperation from the principal and agreeability for conducting the study. Paired data of these children were used for studying dynamics of growth and weight trends in the study population. The reference data used were taken from WHO 2006-07 data set for growth parameters in children. Age in months was used for converting BMI, weight and height as WHO references. The cohort was divided into various sub groups for further analysis. The data was entered into Microsoft excel spread sheet and then subjected to appropriate statistical analysis using Microsoft excel data analysis package for calculating mean and standard deviation. The entered data of excel was imported into Anthro software package of WHO and their means were compared. Unpaired t-test was used for comparing individual group. These tests were used for comparing weight transition among subgroups. Significance was assigned by p value.

RESULTS AND DISCUSSION

Result

Two hundred and fifty two subjects completed and returned the questionnaires. Data for 72 of the 252 participants were excluded from this study because some of them were reported staying with grandparents and some were having diseases such as kidney disease, asthma and other exclusion criteria. Table: 2 show the sample distribution and characteristics of study participants among the study population. The nutritional status of children whose mothers were working for earnings was compared to those of non-working mothers using t-tests. These results were found while controlling the confounding variables of maternal differentiation. The mean weight of the employed mother's children and un-employed mother's children were 13.58kg (1.61SD) & 14.25kg (1.88SD) respectively. The mean height of the employed mother's children and un-employed mother's children were 94.6cm (5.32SD) & 96.84cm (5.81SD) respectively. The mean BMI of the employed mother's children and un-employed mother's children were 15.23kg/m² (1.84SD) & 15.18kg/m² (1.35SD) respectively.

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Table 2: Characteristics of study participants

| Characteristics | N=160 | Unemployed=80 | Employed=80 |
|---|--------------|---------------|--------------|
| Mean age (months of study children (SD) | 35.56 (9.02) | 37.28 (9.00) | 35.84 (8.98) |
| Age (months) 24-35 | 81 (50.6) | 35 (43.7) | 46 (57.5) |
| distribution of 36-47 | 55 (34.4) | 32 (40.0) | 23 (28.7) |
| study children 48-59 | 24 (15.0) | 13 (16.25) | 11 (13.7) |
| (%) | | | |
| Sex of Boy Total | 86 (53.7) | 41 (51.2) | 45 (56.2) |
| Study 24-35 | 42 (26.25) | 19 | 23 |
| children 36-47 | 29 (18.13) | 15 | 14 |
| (%) 48-59 | 15 (9.37) | 7 | 8 |
| Girl Total | 74 (46.2) | 39 (48.7) | 35 (43.7) |
| 24-35 | 39 (24.37) | 16 | 23 |
| 36-47 | 26 (16.25) | 17 | 9 |
| 48-59 | 9 (5.63) | 6 | 3 |

Table 3: Various mean & deviations of characteristics among employed and unemployed group

| Characteristics of children | Age group (months) | Employed group N | mean | SD [‡] | Un-employed group N | Mean | SD | t-Test P value |
|-----------------------------|--------------------|------------------|-------|-----------------|---------------------|-------|------|----------------|
| HEIGHT (cm) | 24-60 | 80 | 94.6 | 5.32 | 80 | 96.84 | 5.81 | 0.012 |
| | 24-35 | 46 | 91.68 | 4.20 | 35 | 93.21 | 5.19 | 0.147 |
| | 36-47 | 23 | 97.37 | 3.91 | 32 | 97.52 | 3.08 | 0.874 |
| | 48-60 | 11 | 100.8 | 3.18 | 13 | 104.9 | 3.12 | 0.004 |
| WEIGHT (Kg) | 24-60 | 80 | 13.58 | 1.61 | 80 | 14.25 | 1.88 | 0.017 |
| | 24-35 | 46 | 13.1 | 1.42 | 35 | 13.29 | 1.53 | 0.566 |
| | 36-47 | 23 | 13.7 | 1.46 | 32 | 14.37 | 1.32 | 0.081 |
| | 48-60 | 11 | 15.3 | 1.41 | 13 | 16.53 | 1.84 | 0.084 |
| BMI* (kg/m ²) | 24-60 | 80 | 15.23 | 1.84 | 80 | 15.18 | 1.35 | 0.845 |
| | 24-35 | 46 | 15.7 | 2.06 | 35 | 15.30 | 1.34 | 0.321 |
| | 36-47 | 23 | 14.4 | 1.12 | 32 | 15.12 | 1.25 | 0.032 |
| | 48-60 | 11 | 15.1 | 1.48 | 13 | 15.00 | 1.43 | 0.868 |

* Body Mass Index, † Mid Upper Arm Circumference, ‡ Standard Deviation

Table 4: Percentile Distribution (Employed/Unemployed)

| Age groups | N | BMI-for-age | % < 3SD | % < 2SD | % < +1SD | % < +2SD | % < +3SD | Mean | SD |
|--------------|-------|-------------|---------|----------|----------|----------|----------|-------------|-----------|
| Total (0-60) | 80/80 | | 2.5/0 | 11.3/6.3 | 15/8.8 | 6.3/0 | 1.3/0 | -0.35/-0.33 | 1.36/1.06 |
| (24-35) | 46/35 | | 0/0 | 8.7/5.7 | 21.7/8/6 | 10.9/0 | 2.2/0 | -0.15/-3.36 | 1.5/1.09 |
| (36-47) | 23/2 | | 4.3/0 | 17.4/9.4 | 0/9.4 | 0/0 | 0/0 | -0.82/-0.3 | 1/1.03 |
| (48-60) | 11/3 | | 9.1/0 | 9.1/0 | 18.2/7.7 | 0/0 | 0/0 | -0.2/-0.31 | 1.25/1.16 |

*Values are based on WHO standards.

%<-2SD includes %<-3SD; %>+2SD includes %>+3SD; %>+1SD includes %>+2SD and %>+3SD.

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Discussion

In this study analysis of data on changes in prevalence of under nutrition as assessed by BMI for age revealed some interesting findings. There was slightly more BMI for age, in employed mother's children reflecting the adverse impact of employment. The observed changes in BMI as assessed by weight, height can be explained on the basis of the response of these indices to unhealthy feeding habits of the children of employed mother. Nakahara *et al.*, (2006), suggested that in many developing countries, the poor women had multiple roles, and that often their time constraints were so severe, that their participation in the income- generating activities resulted in a reduced childcare time, which in turn affected the children's health. Powell and McGregor, 1985, found that the nutritional status of the children of the working mothers was poorer than that of the children whose mothers stayed at home. The effect of the mother's occupation on the child's nutritional status was complicated, though it could be expected that the working mothers would be better able to provide for their families.

The maternal employment and the educational characteristics constrain the good child-care practices, and the alternative care- givers take over a more important role in the child care as the mothers join the work force. Mittal *et al.*, (2007), in their study, found that the mother's occupation did seem to affect the nutritional status of the child, though a statistical analysis showed that the difference was insignificant. According to Bhangi *et al.*, (2000), 75% of the working mothers had some help which was available for childcare. However, Jain *et al.*, (1985), suggested that the childcare which was given by the mother was superior to that which was given by any other family member.

Kimmel and Powell (2001) suggested that for many mothers, for reasons which were based on either the market demand or on their skill sets, the jobs that required the nonstandard hours of some form could be their only option. Being a nonstandard worker significantly reduced the likelihood of using formal modes of the child care, such as a child care centre.

This study also showed that a majority of the working mothers could only spend one hour with their dependent children. In contrast, Desai *et al.*, 1994, found that the mother's time which was spent in specific activities did not differ much by her work status.

However, according to Bhangi *et al.*, (2000), the time which was spent by housewives in childcare (3-4 hours vs. working women 2-3 hours) was more. Silva *et al.*, (2000) found that the supplementary feeding at the day care centres improved the children's nutrition, while Gershoff *et al.*, (1988), observed that the supplementary feeding at the day care centres had no effect on the children's growth. The Anganwadi centres have to be strengthened, to provide nutrition and also care for the minor illnesses, so that the children can develop well. Kumar *et al.*, (1977) observed that the improvements in the wage income translated into improvements in the child nutrition status more readily in the households where the women were employed. Educated, nutritionally strong and employed mothers who had control over their household resources could take care of their children more effectively, which was reflected in the better nutritional status of their children.

Finally in this study, the children of the unemployed mothers weighed significantly more and stood significantly taller than the children of the employed mothers which need further studies. Tucker *et al.*, (1988), in their study, found a similar positive impact. Toyoma *et al.*, also found that the children of the non-working mothers had significantly a greater height and weight.

Conclusion

However, in this study, with our observation & discussion it is concluded that the children of the working women was having more BMI than those of the non-working women but on statistic parameters the difference was not significant in all groups which need further studies on large sample data.

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