

Research Article



INTERNATIONAL RESEARCH JOURNAL OF PHARMACY

www.irjponline.com

ISSN 2230-8407 [LINKING]

PSYCHOLOGICAL, DIABETIC AND BUILT ENVIRONMENT ELEMENTS IN INDIAN SUBJECTS

Dr. Chavan Sachin Janarao,^{1*} Dr. Pranav V Manek²

^{1*}Associate Professor, Department of Community Medicine, Dhanalakshmi Srinivasan Medical college & Hospital, Siruvachur, Perambalur, Tamilnadu

²Clinical Assistant Professor, Department of Global And Population Health, Henry M. Goldman School of Dental Medicine, Boston University, USA

Corresponding Mail id: chavangood@gmail.com

How to cite: Chavan SJ, Manek P. Contact dermatitis by PPE usage in Indian healthcare professionals. International Research Journal of Pharmacy, 2023,14:8:83-87.

Doi: 10.56802/2230-8407.1303607

ABSTRACT

Background: Body weight and built environment elements have been linked internationally for a long time. However, there is a dearth of information in the literature currently available about the roles played by psychological, diabetes, and built environmental elements in South Indian topics.

Aim: The purpose of this study was to evaluate the impact of psychological, diabetic, and built environment variables on Indian participants.

Methods: In this study, 183 participants—246 men and 120 women—between the ages of 16 and 69 who had lived in the same location for at least three years and had a BMI between 17.1-30.3 kg/m² were evaluated. Every subject's diabetes condition and built environment data were evaluated. Participants with diabetes mellitus had their psychological stress, quality of life, and wellbeing data evaluated. Additionally, assessments were conducted on diabetic worry, social worry, effect, satisfaction, well-being, energy, anxiety, and depression.

Results: Physically active, non-vegetarian, and working participants had lower BMIs. In male participants, weight and fasting blood glucose were more strongly associated with energy and less with anxiety, according to Guttman's Smallest Space Analysis (SSA). Age and the individuals' positive well-being were closely correlated in both sexes. Furthermore, there was a strong correlation between age, weight, and fasting glucose levels in both sexes.

Conclusions: in order to develop preventative interventions, it is critical to comprehend how psychological elements and the built environment affect the body weight of diabetes people.

Keywords: diabetes, obesity, physical activity, psychological aspect, quality of life, well-being

INTRODUCTION

The incidence and prevalence of diabetes mellitus are on the rise worldwide, including in India, where the condition has been becoming worse in recent years. As a result, it is critical to establish preventative measures that must be implemented to stop the epidemic. Existing research from industrialized countries has shown that the built environment contributes to obesity and diabetes mellitus, which suggests that designing the urban living environment might be a very cost-effective strategy to counteract the disease's increase.¹

Cities are becoming more urbanized as a result of people's desire to physically separate their places of employment and living due to major worries about the close proximity causing environmental pollution and contagious diseases. However, obesity and its associated consequences have been linked to dispersed living. Learning about the negative social and physical repercussions of urbanization from the West is necessary in order to prevent comparable effects in India, where urbanization is growing at a rapid pace.²

The built environment of an area is the result of intricate relationships between the natural resources, economic, sociocultural, technical, and geographic elements. Therefore, it is essential to determine which aspects of the built environment influence the behavior of individuals in a certain area. 3- Therefore, the current study sought to evaluate the role of psychological, diabetes mellitus, and built environment components in Indian individuals.

MATERIALS AND METHODS

Assessing the impact of diabetes mellitus, psychological variables, and built environment elements in Indian patients was the goal of the current observational clinical investigation. The study subjects were from the Department of Medicine of the Institute. Prior to their involvement in the study, all individuals gave their written and verbal informed consent. Individuals between the ages of 16 and 67 who had lived in the same neighborhood for at least three years and were chosen at random for the research were evaluated. Using a self-reporting questionnaire, the daily activity levels of residents in a certain neighborhood on a given day were evaluated for all individuals. Additionally, information on the patients' energy consumption and use was collected in order to link it with their body mass index (BMI). By dividing body weight in kilograms by height in meters squared, the BMI was determined.

Five other variables—sleep, shift work, PRA (professional activity), occupation type, and dietary type—were assessed via a questionnaire. Non-home-based subjects had to go a certain distance from their homes for job or educational purposes while they were employed. Subjects were divided into two groups for shift work: those working a normal shift from 8 or 9 AM to 4 or 5 PM, and those working shifts with variable timings. In siesta, afternoon naps that lasted less than an hour were assigned a rating of two (considered healthy) and any other amount of time received a mark of one. Both those who participated in afternoon siesta and those who did not were separated into two groups. Dietary characteristics were evaluated as either vegetarian or non-vegetarian.

A professional activity is any significant activity that a person engages in during the day that requires them to spend the most of their time in person, whether at home or at work. Among research participants, the typical 8-hour workday was most frequent. Few instances, although, occurred where workdays fell inside the typical range of ± 2 hours. Based on their metabolic activity levels, the individuals were split into four main groups: inactive, moderately active, active, and highly active. Their respective metabolic activity levels were 90-150 KCAL/H, 151-300 KCAL/H, 301-480 KCAL/H, and 481-750 KCAL/H. In 482 individuals with diabetes mellitus, several psychological aspects were evaluated. The results showed that psychological stress might exacerbate the negative consequences of the built environment. The DCCT quality of life questionnaire and the diabetes well-being study were used to collect data from individuals with diabetes mellitus.⁴

Subjects' experiences with diabetes treatment and management were evaluated using the DCCT quality of life questionnaire. A 5-point rating system was used to evaluate the responses. Subscale scores were calculated by dividing the collected responses for the core questions by a number of items. However, only 11 of the 33 variables for which data were collected were used for the study's analysis. Social and diabetes concerns, such as physical changes, insurance issues, career, and marital concerns, impact, such as shame, physical sickness, low blood sugar, and pain, satisfaction, such as knowledge about diabetes, blood tests, and check-ups, positive wellbeing, energy, anxiety, depression, fasting blood sugar levels, weight, gender, and age of the subjects were among the variables evaluated.

The data gathered were analyzed statistically using SPSS (Statistical Package for the Social Sciences) software version 24.0 (IBM Corp., Armonk, NY, USA) for assessment of descriptive measures, Student t-test, ANOVA (analysis of variance), and Chi-square test. The results were expressed as mean and standard deviation and frequency and percentages. The p-value of <0.05 was considered statistically significant.

RESULTS

The goal of the current observational clinical investigation was to evaluate the roles played by psychological, diabetes mellitus, and built environment variables in Indian participants. This study evaluated 183 participants, 246 of whom were men and 120 of whom were women, aged 16–69, with a BMI between 17.1-30.3 kg/m², and who had lived in the same

location for at least three years. Diabetes status and built environment data were evaluated for each participant. Selected constructed environmental characteristics in the research participants did not show any discernible differences. With $p=.0.143$, the study's 246 male and 120 female participants were statistically non-significant. The study's non-vegetarian population was substantially higher than its vegetarian population ($p=0.08$). Additionally, $p=0.01$ showed a substantially greater no siesta than no siesta.

With $p=0.177$, shift and general work were statistically equivalent among the study participants. With $p=0.001$, people with significantly higher occupations were active, followed by those who were moderately active and sedentary. The percentage of non-home-based individuals was significantly greater than that of home-based participants ($p=0.004$) (Table 1). According to the study findings, data on 33 psychosocial factors were collected from 482 diabetics. Of these, only 11 variables were evaluated: SWDW (Social and Diabetes Worry), SAT (satisfaction), IMP (impact), ENE (energy), PWB (positive well-being), ANX (anxiety), DEP (depression), FBS (fasting blood sugar) levels, WT (weight), gender, and age of the subjects. Out of the many correlations, only those with $p=0.01$ were statistically significant.

The only factor that was shown to be substantially connected with weight was gender, with women being heavier than men. Weight did not substantially correlate with any psychological factors. There was a notable inverse relationship between satisfaction and fasting blood sugar. Anxiety and satisfaction showed a strong positive association, whereas positive well-being and energy showed a negative correlation. Social and diabetes worry with impact showed a substantial positive association with satisfaction, and satisfaction and positive social and diabetes worry showed a strong positive correlation with impact (Table 2).

To further evaluate the association between various psychological characteristics, Guttman's smallest space analysis was used. The symmetrical matrix's WSSA1 (Weighted Smallest Space Analysis1) process was discovered. WSSA1 To get a deeper understanding of the connections between the different psychosocial factors, further analyses were conducted using Guttman's Smallest Space Analysis7.

Analysis of the Weighted Smallest Space 0 represents the best fit, while 1 represents the poorest fit. An alienation coefficient value of 0.15 or below was deemed adequate for determining the data's legality. A value greater than 0.15, however, may in fact be interpretable. With a 0.02 alienation coefficient, the SSA-2 dimensional findings on only psychological factors revealed one facet with three variables: energy and positive well-being, impact and satisfaction, social concern and diabetes, and sadness and anxiety. Although correlation studies provided information on different variables, they were typically in agreement with SSA.

Additional SSA was performed to evaluate the respondents' age, weight, and fasting blood sugar levels in order to see whether the factors were associated to psychosocial characteristics differently for males and females.

it was seen that Anxiety and energy levels were most strongly associated with weight and fasting blood glucose. In females, SSA revealed that the strongest correlations between energy and weight and fasting glucose. In females, anxiety was similarly associated with weight and fasting glucose, although it was less pronounced in men. There was a strong correlation between weight and fasting glucose in both sexes.

DISCUSSION

In this study, 183 participants—246 men and 120 women—between the ages of 16 and 69 who had lived in the same location for at least three years and had a BMI between 17.1-30.3 kg/m² were evaluated. Every subject's diabetes condition and built environment data were evaluated. For several constructed environmental elements, there was no discernible difference among the research participants.

The study's 246 male and 120 female participants were statistically non-significant ($p=.0.143$). The study found a considerably larger number of non-vegetarians than vegetarians ($p=0.008$). Furthermore, with $p=0.01$, a substantially greater no siesta was seen than no siesta. With $p=0.177$, shift and general work were statistically equivalent among the study participants. With $p=0.001$, people with significantly higher occupations were active, followed by those who were moderately active and sedentary. The number of non-home-based participants was significantly higher than that of home-based individuals ($p=0.004$). Similar demographic data were used to evaluate patients in earlier research by Unwin N et al. (2010) and Fogelholm M et al. (2006).

Data on 33 psychosocial factors were collected from 482 diabetics, and only 11 variables were evaluated. These included SWDW (Social and Diabetes Worry), SAT (satisfaction), IMP (impact), ENE (energy), PWB (positive well-being), ANX

(anxiety), DEP (depression), FBS (fasting blood sugar) levels, WT (weight), gender, and age of the subjects. This was done to determine differences in BMI of study subjects based on built environmental factors. Only correlations with $p=0.01$ were statistically significant out of a vast number. It was discovered that the only factor that strongly linked with weight was gender, with women weighing more. There was no significant correlation between weight and any psychological factors. The relationship between satisfaction and fasting blood sugar was significantly inverse.

Anxiety and satisfaction showed a strong positive association, whereas positive well-being and energy showed a negative correlation. Positive social and diabetes worry were shown to be significantly correlated with satisfaction, and social and diabetes worry were found to be significantly positively correlated with impact. These findings were in line with those of Sudhir Kumar P et al. (2010) and Ebrahim S et al. (2010), who also observed differences in the BMI of study participants depending on built environmental characteristics similar to the current study.

According to the study's findings, Guttman's smallest space analysis was performed in order to evaluate the association between various psychological characteristics. For a symmetrical matrix, the WSSA1 (Weighted Smallest Space Analysis1) process was observed.

The Weighted Smallest Space Analysis1 scale goes from 0 (excellent fit) to 1 (poorest fit). An alienation coefficient value of 0.15 or below was deemed adequate for determining the data's legality. A answer greater than 0.15, however, could in fact be interpretable. With a 0.02 alienation coefficient, the SSA-2 dimensional findings on only psychological factors revealed one facet with three variables: energy and positive well-being, impact and satisfaction, social concern and diabetes, and sadness and anxiety. Although correlation studies provided information on different variables, they were typically in agreement with SSA. These results were consistent with those of Ramachandran A et al.9, whose findings were similar to the current study's findings about the link between various psychological factors as described by the authors.

Additionally, additional SSA was conducted to evaluate the subjects' age, weight, and fasting blood sugar levels in order to determine whether the variables were related to psychosocial variables separately for males and females. It was discovered that the variables that were most closely associated with anxiety and energy levels were weight and fasting blood sugar. Weight and fasting glucose were most strongly associated with energy, according to SSA in females. Although it was less pronounced in males, anxiety was similarly associated with weight and fasting glucose in females. Weight and fasting glucose levels were strongly correlated in both sexes.

The results of the current study were consistent with those of the earlier research conducted by Abegunde DO et al. in 2007 and Wells NK et al. in 2007, when SSA was used to evaluate the individuals' weight, fasting blood sugar levels, and age.

CONCLUSION

Despite its limitations, the current study ends and emphasizes how important it is to comprehend how psychological variables and the built environment affect the body weight of diabetes participants in order to develop preventative techniques. To draw a conclusion, however, more research with bigger sample numbers and longer monitoring is required in the future.

REFERENCES

1. Sridhar G.R., Venkata P., Lakshmi G. Time trends in the prevalence of diabetes mellitus: ten-year analysis from Southern India (1994—2004) on 19,072 subjects with diabetes. *J Assoc Physicians India*. 2010;58:290–4.
2. Sridhar G.R., Madhu K., Veena S., Madha R., Sangeetha B.S., Asha Rani. Living with diabetes: Indian experience. *Diab Metabolic Syndr: Clin Res Rev*. 2007;1:181–7.
3. Sridhar G.R., Rao P.V., Ahuja M.M.S. Epidemiology of diabetes and its complications. In: Ahuja M.M.S., Tripathy B.B., Moses S.G.P., Chandalia H.B., Das A.K., Rao P.V., editors. *RSSDI Textbook of Diabetes*, Hyderabad. Research Society for the Study of Diabetes in India; 2002; pp 95–112.
4. Mohan V., Sandeep S., Deepa R., Shah B., Vardhes C. Epidemiology of type 2 diabetes: Indian scenario. *Indian J Med Res*. 2007;125:217.
5. Unwin N., Whiting D., Roglic G. Social determinants of diabetes and challenges of prevention. *Lancet*. 2010;375:2204–5.
6. Fogelholm M., Valve R., Absetz P. et al. Rural-urban differences in health and health behavior: a baseline description of a community health-promotion program for the elderly. *Scand J Public Health*. 2006;34:632–40.

7. Sudhir Kumar P., Appa Rao A., Sridhar G.R. Built environment and diabetes. *Int J Diab Dev Countries*. 2010;30:63–8.
8. Ebrahim S., Kinra S., Bowen L., et al. The effect of rural-to-urban migration on obesity and diabetes in India? A cross-sectional study. *PLoS Medicine*. 2010;7:e1000268.
9. Ramachandran A., Mary S., Yamuna A., Murugesan N., Snehalatha C. High prevalence of diabetes and cardiovascular risk factors associated with urbanization in India. *Diabetes Care*. 2008;31:893–8.
10. Lake A., Townshend T. Obesogenic environments: exploring the built and food environments. *J Royal Soc Prom Health*. 2006;126:262–7.
11. Abegunde D.O., Mathers C.D., Adam T., Ortegon M., Strong K. The burden and costs of chronic diseases in low-income and middle-income countries. *Lancet*. 2007;370:1929–38.
12. Wells N.K., Ashdown S.P., Davies E.H.S., Cowett F.D., Yang Y. Environment, design, and obesity. *Environment and Behavior*. 2007;39:6–33.

S. No	Groups	Number (n)	Mean $\pm$ S. D	p-value
1.	Gender			
2.	Males	246	25 $\pm$ 3	0.143
3.	Females	120	25.5 $\pm$ 3	
4.	Food habits			
a)	Vegetarian	146	25.7 $\pm$ 3	0.008
b)	Non-vegetarian	220	24.5 $\pm$ 3	
5.	Siesta			
a)	Siesta	82	24.0 $\pm$ 4	0.01
b)	No Siesta	284	25.3 $\pm$ 3	
6.	Shift/General			
a)	Shift	38	24.1 $\pm$ 4	0.177
b)	General	328	25.1 $\pm$ 3	
7.	Profession			
a)	Very active	8	19.5 $\pm$ 0	0.001
b)	Active	186	24.2 $\pm$ 2	
c)	Moderate	162	26.3 $\pm$ 3	
d)	Sedentary	10	24.4 $\pm$ 5	
8.	Home-based/non-home-based.			
a)	Non- home based	288	24.7 $\pm$ 3	0.004
b)	Home-based	78	29.9 $\pm$ 3	

Table 1: Difference in BMI of study subjects based on built environmental factors