Covariates and Prevalence of Obesity among Adult North Indian Population

Kajri Tandon, Satwanti Kapoor and Anup Kumar Kapoor

University of Delhi, Department of Anthropology, Delhi, India

ABSTRACT

The present study was aimed to investigate the prevalence of obesity and its covariates including age among adult Khatri males and females. A total of 805 subjects (male=381, female=424) between age of 18 yr to 71+ yr residing in Shahjahanpur city, Uttar Pradesh, India were studied cross sectionally. The study highlights the trend of obesity in the population and also discusses in detail, the factors that cause it. An inverse relationship was obtained between level of physical activity and different relative weight categories based on body mass index in both the sexes. Similar association was observed in case of television watching time and overweight/obesity. With increase in hours of television watching the prevalence of overweight/ obese also increased among both Khatri males and females.

Key words*: overweight, obese, covariates, adults, Khatri, Shahjahanpur*

Introduction

There is rapidly escalating epidemic of obesity all over the world[1]. In developed countries this epidemic attracted much attention but there is little realization of a similar and perhaps more serious epidemic in the developing countries. Countries like India have controlled the problems of severe under nutrition to a substantial extent, but are now facing a raising epidemic of obesity[2] along with its related health problems. Consequently significant proportions of overweight and obese now coexist with under nourished[3].

Obesity is a serious and widespread health problem in certain kind of societies, characterized by economic modernization, affluence, food surplus and social stratification. Numerous studies of traditional societies undergoing the process of economic modernization demonstrate rapid increase in the prevalence of obesity. Obesity is first of the »diseases of civilization« to appear[4,5]. Recent life-insurance data and epidemiological studies confirm that increasing degrees of overweight and obesity are important predictors of decreased longevity[6].

Asia has undergone considerable socioeconomic transition in the last three decades which has resulted in increased availability of food, better transport facilities, and better health care facilities. The changing trend was seen first in the urban populations and in the recent years, with improving socioeconomic scenario in the rural areas also. The recent epidemiological data among urban and semi urban southern Indian populations, illustrates the changing scenario[7,8].

India is undergoing a rapid economic transition. This has had a direct bearing on diet and physical activity undertaken among other changes. At this stage, in the associated epidemiological transition, country is facing the double burden of communicable and non-communicable diseases. These swift changes in the levels and composition of dietary and inactivity patterns in transitional societies are related to a number of socioeconomic and socio demographic changes[9–11].

Obesity is not an immediate lethal disease in itself but is a significant risk factor associated with a range of serious non-communicable diseases and conditions[12]. The need of this study is important because as obesity increases, India is beginning to feel the burden of associated chronic diseases like heart disease, hypertension and type-2 diabetes[13]. There are very few incidence studies done in India looking for morbid obesity, though there are many reports that talk about the increasing menace of obesity and associated diseases[14,15]. The prevalence of obesity is high and still growing, it is important to understand who is at risk for becoming obese and for what rea-

son so that preventive measures can be implemented. Modernization brings in its wake change in eating patterns and a less active life style[16].

The purpose of the present study was to describe the evident trend of overweight and obesity and its covariates among Khatri population. This population is experiencing modernization and it is important to assess as to why this population may be susceptible to obesity. Modernization here essentially means a transition from rural – urban setup to a totally urban setup. Rural setup is India is characterized largely by an agrarian economy. The transition to an urban economy is characterized by a shift from agrarian setup to an industrial setup. There is a transition from agrarian to industrial and service sector thereby leading to an occupational shift. This in turn brings about concomitant changes in life style patterns one of which being considerable reduction in manual labour.

Subjects and Methods

Subjects

The population chosen was Khatri of Shahjahanpur city, Uttar Pradesh, India. This is an endogamous population. The Khatris of Shahjahanpur city recognize themselves as belonging to the *Kshatriya varna (warrior caste)* with relatively high social status. The present study was conducted on a sample of 805 subjects (male = 381, female = 424) between age of 18 yr to 71+ yr. The data was divided into seven age groups: 18–19 yr, 20–25 yr, 31–40 yr, 41–50 yr, 51–60 yr, 61–70 yr and 71+ yr. The late teen groups were kept separate. The subjects came from middle to higher middle income group. Most of the subjects came from business families, though an attempt was made to include other occupational groups as well.

The division of age groups was based on the assumption that after attaining adulthood, changes in various body measurements or physiological functions are not very fast and remain relatively stable over an age range of five to ten years as compared to growing years. The subjects in their late teens, i.e., 18 and 19 years old were grouped together. The young adults between 20 to 25 years were grouped together and for analysis; interpretation, discussion purposes have been treated as control group.

Methods

A number of tools and techniques were employed for collection and analysis of data in the present study. Information regarding the socio – demographic profile was collected through interviews and observation. Interview was conducted in the home setting with the help of research schedules. Information was gathered on various aspects of life style like mode of commuting, duration of television watching, food habits, frequency of fast food intake, self reported physical activity pattern. For socio--economic character, a number of parameters like age, gender, educational qualification, employment, income,

family size etc. were taken into account. The socio- economic status of the subjects was evaluated according to the scale described by Aggarwal et al.[17].

The anthropometric measurements were taken according to the techniques described by Weiner and Lourie[18]. Each subject was measured for stature, body weight, skin fold thickness at biceps, triceps, subscapular, suprailiac, abdomen, midaxillary and calf medial sites. All the subjects were apparently healthy with no visible physical deformity. Pregnant women, physically and mentally challenged subjects were not included in this study.

Body Mass Index (BMI) and Grand Mean Thickness (GMT) were computed. An important factor that prevents meaningful interpretation or comparison of data from different parts of the world is the wide variation in the definition of adult obesity. In 2000, WHO gave guidelines to define overweight and obesity[19], which has been followed in the present study.

The categorizations of overweight and obese were made on the basis of BMI, as per the guidelines of World Health Organization[19]. All the subjects were divided into four categories according to their Body Mass Index as:

BMI <18.4: underweight,

BMI 18.5 to 24.9: normal weight,

BMI 25.0 to 29.9: overweight,

BMI >30.0: obese.

In order to assess the relative subcutaneous fat mass, Grand Mean Thickness was calculated as a mean of all the skin fold thickness taken at various sites such as biceps, triceps, sub scapular, suprailiac, midaxillary, abdomen and calf medial sites. The logistic regression models were estimated using the SPSS software package (SPSS version 10.0). The results are presented in the form of mean, standard deviation, percentage and relative risks (RR) with 95% confidence intervals (95% CI).

Results

According to Table 1, the BMI mean value among males was maximum in 61–70 yr age group (29.2 kg/m^2) and minimum in 18–19 yr (21.5 kg/m^2). The maximum BMI among females was observed in 41–50 yr age group (29.2 kg/m^2) and minimum in 18–19 yr group (20.3 kg/m^2). The highest Grand Mean Thickness among males and females was observed in 41–50 yr age group (15.0 mm and 19.0 mm respectively). Minimum value of 11.1 mm (males) and 13.1 mm (females) was found in age groups 71+ year and 18–19 year respectively.

Table 2 displays the highest prevalence of overweight (77.1%) to be in 41–50 yrs age group and that of being obese (37.0%) among 61–70 yrs old male subjects. The maximum percentage of overweight (45.8%) and obese females (41.2%) were found in 41–50 yrs age category. It was found that the percentage of overweight males were higher than overweight females in all the age categories while in the obese category females outnumbered males in all the age groups.

TABLE 1
ADIPOSITY INDICES AMONG KHATRI MALES AND FEMALES

General adiposity measures		Age Group (yr)													
		18–19		20–25		31–40		41–50		51–60		61–70		71+	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F
Body mass index (kg/m²)	X	21.5	20.3	23.2	20.5	25.0	25.7	28.6	29.2	27.1	27.9	29.2	27.4	22.2	25.8
	SD	2.39	0.79	3.36	3.30	4.10	5.27	3.53	4.31	4.08	5.67	5.43	4.38	3.71	5.57
Grand mean thickness (mm)	X	11.4	13.1	12.3	14.5	14.0	17.2	15.0	19.0	13.1	17.4	12.4	16.0	11.1	14.0
	SD	1.34	0.80	1.11	2.49	1.78	3.58	1.71	2.31	3.69	2.61	0.77	1.68	0.48	1.52

TABLE 2
PREVALENCE OF OVERWEIGHT AND OBESITY AMONG KHATRI MALES AND FEMALES IN DIFFERENT AGE GROUPS

Age groups (yr)	Body Mass Index categories							
	Underweight (%)		Normal Weight (%)		Overweight (%)		Obese (%)	
	Male	Female	Male	Female	Male	Female	Male	Female
18–19	6.7	0.0	93.3	100.0	0.0	0.0	0.0	0.0
20–25	6.9	29.0	65.5	61.3	27.6	9.7	0.0	0.0
31–40	3.6	7.0	46.4	39.5	41.1	40.7	8.9	12.8
41–50	0.0	0.0	8.6	13.0	77.1	45.8	14.3	41.2
51–60	1.5	0.0	18.6	31.0	60.5	42.9	19.4	26.1
61–70	7.4	0.0	11.2	33.3	44.4	42.4	37.0	24.3
71+	10.0	8.8	70.0	47.1	20.0	2.9	0.0	41.2

TABLE 3
DISTRIBUTION OF KHATRI MALES AND FEMALES IN DIFFERENT BODY MASS INDEX CATEGORIES ACCORDING TO FREQUENCY OF FAST FOOD

Fast food intake	Body Mass Index categories							
	Underweight (%)		Normal weight (%)		Overweight (%)		Obese (%)	
Frequency	Male	Female	Male	Female	Male	Female	Male	Female
Never	50.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0
Once in a month	5.7	10.2	94.3	89.8	0.0	0.0	0.0	0.0
Once in a week	4.5	5.8	22.7	65.0	70.9	25.5	1.8	3.6
Twice in a week	0.0	0.0	0.0	0.0	67.3	50.8	32.7	49.2

In order to evaluate the association between certain lifestyle indicators and overweight/obesity, lifestyle measures like frequency of fast food intake, physical exercise and duration of hours spent on television watching were considered and the data is presented in (Table 3 and 4). Among males who never had fast food were equally distributed in underweight (50%) and normal weight categories (50%). Those who reported to have taken fast food at least once a month were in majority (94.3%) and belonged to the normal weight category. Among those who consumed fast food once a week, an overwhelming majority (70.9%) belonged to overweight category, while the rest (22.7%) were in normal weight category. Among the subjects who took fast food at least twice in a week, none were in underweight or normal weight categories, 67.3% belonged to overweight while 32.7% belonged to obese category. A similar trend was observed in case of the females as well. All the female subjects reported to consumption of fast food, only the frequency of intake varied among them.

The prevalence of selected lifestyle indicators on the risk of being overweight /obese in different BMI categories was evaluated (Table 4) and it confirmed that among males who reported to be exercising regularly, a majority, (70.5%) were in normal weight category while 16.3% were overweight, and 3.9% were obese. On the other hand, 61.9% males with sedentary habits were overweight, 19.8% were normal weight, 17.9% were obese

TABLE 4
DISTRIBUTION OF KHATRI MALES AND FEMALES IN DIFFERENT BODY MASS INDEX CATEGORIES ACCORDING TO THE STATUS OF PHYSICAL EXERCISE AND DURATION OF TELEVISION WATCHING

Status of physical exercise	Body Mass Index categories							
	Underweight (%)		Normal weight (%)		Overweight (%)		Obese (%)	
	Male	Female	Male	Female	Male	Female	Male	Female
No	0.4	2.1	19.8	25.6	61.9	38.6	17.9	33.7
Yes	9.3	8.6	70.5	74.8	16.3	15.1	3.9	1.4
Duration of T.V. watching								
30 min.	28.3	12.9	71.7	87.1	0.0	0.0	0.0	0.0
60 min.	0.0	0.0	64.7	34.6	34.1	39.6	1.2	4.4
More than 60 min	0.0	0.0	0.0	0.0	71.4	42.8	28.6	57.2

and 0.4% were underweight. Females, who reported to be exercising regularly, were mostly in the normal weight category (74.8%) whereas among females with sedentary habits, 38.6% were overweight, 33.7% were obese, 25.6% were of normal weight and 2.1% were in the underweight category.

According to the status of television watching (Table 4), the subjects were divided into three categories for better understanding – 30 minutes of television watching, 60 minutes of television watching and more than 60 minutes of television watching. Among males who watched television for 30 minutes per day, 71.7% were in normal weight category and 28.3% were in the underweight category. Among the sixty minutes per day television watching group, 64.7% were in the normal weight category, 34.1% were overweight, 1.2% were obese and none

TABLE 5
RELATIVE RISKS OF SELECTED LIFESTYLE INDICATORS ON CHANCES OF BEING OVERWEIGHT/OBESE AMONG KHATRI MALES AND FEMALES

Lifestyle indicators	Overweight/Obese (BMI ≥25 kg/m^2)	
	Relative risk (RR), 95% CI	
	Male	Female
Status of television watching		
More than 60 min	5.27	7.59
60 min	2.93	1.83
30 min *	1.00	1.00
Fast food intake		
Twice in a week	8.90	9.60
Once in a week	4.10	4.00
Once in a month	1.00	1.00
Physical exercise status (daily)		
Yes	–7.39	–6.32
No*	1.00	1.00

* Reference category, 95% CI = 95% confidence interval

were underweight. The group of males who watched television for more than 60 minutes per day were either overweight (71.4%) or obese (28.6%). In case of female subjects who reported to 30 minutes of television watching per day, 87.1% were in normal weight category and 12.9% were under weight. Among the sixty minutes per day television watching group, none were under- weight, 39.6% were overweight, 34.6% were normal weight and 4.4% were obese. The group of females who watched television for more than sixty minutes per day was either overweight (42.8%) or obese (57.2%).

The effect of above mentioned selected life style indicators on obesity was further re-examined through logistic regression analysis (Table 5), in which relative risk (RR) was calculated. The relative risk (RR) of being overweight or obese among men and women who watched television for more than 60 minutes/day was 5.27 and 7.59 times more, respectively as compared to those who watched television for 30 minutes. It was found that eating fast food twice a week raised the risk of becoming overweight/obese by more than 8.9 times in males and 9.6 times in females. Regarding physical exercise status, males and females who reported to be exercising daily, had lesser risk of becoming overweight/obese by –7.39 times in males and –6.32 times in case of females as compared to sedentary subjects.

Discussion

Adult obesity or overweight is due to an increase in the amount and proportion of adipose tissue. Despite the apparent universal increase in adiposity with age, there is great population diversity in this increase and in the prevalence of adiposity. Diversity in adiposity and obesity is probably caused by complex interactions between population and family, genetic factors and diet and physical--activity patterns related to the socioeconomic environment[20].

The logistic regression analysis revealed that some life style indicators influenced the nutritional status (BMI) of Khatri males and females. Results of present study showed that television watching, fast food intake

frequency and not doing any physical exercise were some of the important determinants of being overweight/obese. Agarwal and Mishra also reported the age, gender, media habit, socio-economic standard to be most important covariates of overweight/obesity among women in India[21].

Level of physical activity is also a contributing factor for obesity. Multiple cohort and cross-sectional studies have shown an association between obesity and inactivity[22]. There is the possibility that this relationship is bidirectional, with obesity discouraging physical activity and inactivity promoting weight gain[23]. It was observed that those males who reported to be exercising regularly were more in normal weight category as compared to sedentary males. It was observed that men, who exercised daily, reduced the risk of becoming overweight/obese by more than 7.39 times as compared to sedentary males, and physically active females by more than 6.32 times as compared to sedentary females. Most of the overweight/obese women were in non-exercising category.

Wake et al. (2003)[24] reported a small proportion of variance in child body mass index to be related to television watching. The television watching is not only a sedentary activity; it usually prompts overeating and snacking. The trend of regular television watching was also very conspicuous among obese/overweight males and females. Proliferation of televisions and the growth of this visual media have been responsible to a large extent in drawing people indoors. The time, which was earlier spent on games and other physical activities, is now being spent in front of the television. The Khatri males who watched less TV (thirty minutes) were also found to be exercising more as compared to those males who watched television for longer durations. Maximum number of overweight/obese subjects watched TV for more than an hour in a day.

This can be attributed to the fact that there are a plethora of television soaps on air these days, each being at least an hour long. Further, the mushrooming of news channel kept the elder male members hooked to television. This association was further strengthened with the help of logistic analysis, which clearly indicated that subjects who watched television for more than sixty minutes per day were more prone to become overweight/obese as compared to those who watched television for less than sixty minutes in a day.

Another factor that has come to become very important is the frequency of fast food consumption. Obesity it is often assumed that the widespread availability of fast food is an important determinant of the dramatic increases in obesity rates[25,26]. This is reconfirmed by the findings of the present study that people who consumed fast food twice in a week were mostly in overweight/obese categories as compared to those who consumed fast food less frequently. With the booming of fast food industry all over the country and with the coming up on a large-scale, fast food joints across the length and breadth of country, this has become unavoidable and the economic transition has increased the affordability of fast food. Such foods include items like burgers, pizzas, rolls, cutlets, *chaat* etc. This list can be extended limitlessly. Fast foods are largely in the nature of snacks. They did not replace the conventional meals in a day taken by the present subjects but added to it.

The fact that obesity is acquiring epidemic proportions in the developed world is well accepted but rising prevalence in developing countries warrants greater concern. In the last decade or so, rising affluence, urbanization, satellite television invasion has changed lifestyle

TABLE 6

OVERWEIGHT AND OBESITY IN INDIA: PREVALENCE RATE OF OVERWEIGHT AND OBESITY AMONG FEMALES IN INDIA

Investigators	Group studied	BMI value	Prevalence (%)
Satwanti et al. 1980[28]	Punjabi Females	23.3 (fat % = 35%)	17.4
Sood et al. 1984[29]	Delhi Females	27.0	15.1
Gopinath et al. 1994[30]	Delhi Urban Females	25.0	33.4
Rao et al. 1995[31]	Hyderabad Urban Females	30.0	25.6
Asthana et al. 1998[32]	Varanasi Females	25.0–29.9 30.0	21.9 8.3
NFI 1991[33]	Delhi Urban Females	25.0	45.6
IIPS & OR; Macro 2000[34]	Indian Females	25.0 30.0	11.0 2.0
Suman and Kapoor 2000[35]	Punjab Girls (Delhi)	25–29.9	8.8
Sidhu and Tatla 2002[36]	Punjabi Females	25.0–29.9 30.0	20.0 25.3
Sidhu et al. 2005[37]	Punjabi Urban Females	25.0–29.9 30.0	22.8 21.1
Present Study, 2006	Khatri Females (UP)	25.0 30.0	30.9 23.1

drastically. Paradoxically, as is happening elsewhere in the developing world, people are using their growing incomes to replace their traditional diets rich in fiber and grain with diets that include a greater proportion of fats and caloric sweetener. All these are responsible for the increasing prevalence of obesity[27].

The Khatris are also undergoing this transition. Lifestyle transition and economic improvement have contributed to the problem of adolescent and adulthood obesity. The change must be related to energy balance. They are probably not physically active enough for the amount they eat. The amount of energy expended to earn a living and obtain food, water, and shelter as well as the amount expended for transportation, personal chores and other aspect of daily life continues to decrease. Most jobs today are sedentary. Automobiles, public transportation, and other labor-saving devices also contribute to sluggish lifestyles.

Countries like India, which are rapidly urbanizing, demonstrate increase in energy intake especially fat intake along with increased levels of sedentarianism. There is growing evidence that in present conditions, perhaps due to decreased physical activities, sedentary lifestyle, altered eating patterns, and increased fat content of the diet, children and adolescents of affluent families are overweight. Studies have been conducted to see the prevalence of overweight/obesity among females in India in various studies (Table 6). Despite variation in criteria of BMI cut-off points, variation in age and socio-economic status of the subjects in different studies, an increase in the overweight/obesity among females was evident. The present study too confirms to the findings made earlier. It needs to be mentioned here that for the prevalence of overweight and obesity varied across different studies. The prevalence of overweight/obesity has indeed gone up substantially over a span of around twenty five years and this clearly is in line with the socio-economic transition occurring in India[38].

Conclusion

The present study describes adult adiposity/obesity among Khatri, a population experiencing modernization, and the probable causative factors for making them susceptible to obesity. This problem needs to be recognized and tackled or it will evolve into the single most important health problem in rapidly developing India.

Acknowledgements

REFERENCES

1. PRENTICE A, Brit Med Bull, 60 (2001) 51. — 2. SIDHU S, MARWAH G, PRABHJOT, Coll. Antropol, 29 (2005) 53. — 3. POPKIN BM, Pub Health Nut, 5 (2002) 205. — 4. TROWELL HC, BURKITT, DP, Cambridge MA, Western diseases: their emergence and prevention (Harvard University Press, 1981). — 5. WORLD HEALTH ORGANIZATION, Obesity: preventing and managing the global epidemic (WHO Technical Report Series, No. 894, 2000). — 6. KIRCHENGAST S, SCHOBER E, WALDHÖR H, SEFRANEK R, Coll Antropol, 28 (2004) 541. — 7. RAMACHANDRAN A, MARY S, YAMUNA A, MURUGESAN N, SNEHALATHA C, Diabetes Care, 31 (2008) 893. — 8. RAMACHANDRAN A, SNEHALATHA C, VIJAY V, Diabetes Research Clinical Practice, 58 (2002) 55. — 9. BANDANA M, CHAKRABORTY R, Coll Antropol, 31 (2007) 943. — 10. NUTRITION FOUNDATION OF INDIA, Obesity in the urban middle class in Delhi (Sci Rep Ser No. 15, 1991). — 11. SIDHU S, KAUR AP, Anthropol Anz, 63(2005) 341. — 12. MUST A, SPADANO J, COAKLEY EH, FIELD AE, COLDITZ G, DIETZ WH, JAMA, 282 (1999) 1523. — 13. SAW SM, RAJAN U, Ann Acad Med, 26 (1997) 489. — 14. VENKATRAMANA P, REDDY PC, Asia Pacific J Clin Nutr, 11 (2002) 66. — 15. MISRA A, PANDEY R M, RAMA DEVI J, SHARMA R, VIKRAM M K, KHANNA N, Int J Obes, 25 (2001) 1722. — 16. AGARWAL PK, Emerging obesity in Northern Indian States: A serious threat for Health. Paper for Presentation (The IUSSP conference, Bangkok, 2000). — 17. AGGARWAL OP, BHASIN SK, SHARMA AK, CHHABRA P, AGGARWAL K, RAJOURA OP, Preliminary Study Indian J Community Medicine, 30 (2005). — 18. WEINER J S, LOURIE A, Human Biology: A guide to field methods (IBP No.9, Oxford: Blackwell Scientific Publication, 1981). — 19. WORLD HEALTH ORGANIZATION, International Obesity Task Force, International Association for the study of obesity: The Asian- Pacific Perspective, Redefining obesity and its Treatment (Australia, Health communications, 2000). — 20. SWINBUM B, EGGER G, RAZA F, Prev Med, 29 (1999) 563. — 21. AGARWAL P, MISHRA V, East-West Center Population and Health Status, 116 (2004) 1. — 22. WILLIAMSON D, MADANS J, ANDA R, Int J Obes Relat Metab Disord, 17 (1993) 279. — 23. DIPIETRO L, Exer Sport Sci Rev, 23 (1995) 275. — 24. WAKE M, HESKETH K, WATERS E, J Pediatr Child Health, 39 (2003) 130. — 25. DAVIS B, CHRISTOPHER C, Am J Public Health, 99 (2009) 1. — 26. EBBELING CB, SINCLAIR KB, PEREIRA MA, GARCIA-LAGO, FELDMAN HA, LUDWIG DS, JAMA, 291 (2004) 2828. — 27. MUSAIGER AO, AL-AWADI AHA, AL-MANNAI MA, Ecol Food and Nutr, 39 (2000) 121. — 28. SATWANTI, SINGH I P, BHARADWAJ H, Am J Phys Anthropol, 53 (1980) 611. — 29. SOOD AK, NATH LM, KAPIL U, GUPTA MC, Ind J Med Res, 80 (1984) 365. — 30. GOPINATH N, CHADHA S L, JAIN P, SHEKHAWAT S, TANDON R, J Asso Phy Ind, 42 (1994) 212. — 31. RAO VK, BALAKRISHNA N, SHATRUGNA V, Man In India, 75 (1995) 241. — 32. ASTHANA S, GUPTA VM, MISRA RN, Ind J Pub Health 42 (1998) 37. — 33. Nutrition Foundation of India, Sci Rep Ser, 15 (1991) 1. — 34. International Institute for Population Sciences and ORC (Macro) 2000. National family health survey (NFHS-2) 1998-1999 India. International Institute of Population Sciences, Mumbai. — 35. VERMA S, KAPOOR S, Acta Med Auxol, 32 (2000) 153. — 36. SIDHU S, TATLA HK, Eds. BHASIN, M.K., MALIK, S.L., Kamla Raj Enterprises, Delhi, 101. (2002) Prevalence of overweight and obesity among adult urban females of Punjab. A cross-sectional study. In: Anthropology trends and applications. — 37. SIDHU S, KAUR A, PRABHJOT, Anthropol Anzieger, 63 (2005) 341. — 38. MUNGREIPHY NK, KAPOOR S, J Biosoc Sci, 42 (2010) 289.

S. Kapoor

University of Delhi, Department of Anthropology, Delhi-110007, India
e-mail: satwanti@yahoo.com

RAZNOLIKOST I PREVALENCIJA PRETILOSTI ODRASLE POPULACIJE SJEVERNE INDIJE

S A Ž E T A K

Cilj istraživanja bio je istražiti prevalenciju pretilosti i njezinu raznolikost, uključujući i dob ispitanika, na uzorku odraslih Khatri žena i muškaraca. Transverzalnom studijom ispitano je ukupno 805 subjekata (381 muškarac, 424 žena) u dobi između 18 i 71 godinu s mjestom prebivališta u gradu Shahjahanpur, Uttar Pradesh, Indija. Studija naglašava trend pretilosti u populaciji i raspravlja u detalje uzročne faktore. Obrnut odnos uočen je između nivoa fizičke aktivnosti i kategorije različite relativne težine bazirane na indeksu tjelesne mase u oba spola. Sličan obrazac uočen je i u slučaju vremenskom periodu gledanja televizije i pretilosti. s povećanjem sati provedenih ispred televizije prevalencija pretilosti i prekomjerne težine povećava se među Khatri muškarcima i ženama.