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Study of Socio Demographic Distribution of Some Non-Communicable Diseases and its Assessment among Rural Population of Latur as Part of Health Camp Under Family Adoption Programme

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ABSTRACT
Global averages for NCDs indicate that they are not just a problem for the urban people, but are also becoming a concern for the rural and lower socioeconomic segments of the Indian population. The study was conducted to assess the sociodemographic characteristics and certain noncommunicable diseases. A cross-sectional study was conducted based on the findings of health camp conducted as part of Family Adoption Programme. The study found that prevalence of hypertension was 35.4%, diabetes was found to be 9.91 % and obesity was 10.34%. Abdominal obesity was more in females compared to males. It was observed in our study that participants with cataract were 21.55 percent. The study shows that prevalence of Diabetes and abdominal obesity was comparable to NFHS-5 statistics in rural Maharashtra. On the other hand, the prevalence of hypertension and obesity exceeded state averages.

INTRODUCTION

In India, Noncommunicable diseases have become a significant public health concern due to their high rates of morbidity and mortality[1]. Global Averages on NCDs suggest that they are not only limited to urban or rich population but also a growing concern among rural and lower socioeconomic sections of the Indian population[2]. A study conducted by Swaminathan K *et al*. (2017) in rural areas of Tamil Nadu found that over 50 percent of rural farming population had diabetes or pre-diabetes[3].

Globalization of unhealthy lifestyles, population ageing and rising unplanned urbanization are some of the factors driving these noncommunicable diseases. Obesity, elevated blood pressure and increased blood glucose are main indicators of unhealthy diet and inactivity. These are referred to as metabolic risk factors and are potential causes of premature deaths in India[4]. In addition to these non-communicable diseases, a major concern is anaemia. Furthermore, Though the government kept up its efforts to address the nutritional and non-nutritional causes of anaemia by deworming, distributing IFA-fortified meals in public health initiatives, anaemia remains particularly pervasive in India[5]. Some of the sociocultural factors that found to related were lack of access to health care, poverty, micronutrient deficiencies, wrong cooking practices and inadequate knowledge of the illness and its preventive measures which needed to be addressed[6].

In India, where 65.5 percent of the population reside in rural areas, there is a major concern regarding access to the healthcare facilities and services, making it harder for them to afford high costs of treating these chronic illnesses. Access to healthcare in rural areas is hampered by a few factors, even with sufficient supplies, such as health illiteracy about infectious and noncommunicable diseases, the loss of a daily pay in seeking healthcare[7]. To address these problems a program of family adoption was launched.

The National Medical Commission (NMC) has mandated Family Adoption Programme (FAP) for MBBS students from 2022 where students were allotted at least five families each. The students were expected to visit these allotted families regularly to learn about the prevailing health problems as well as to assist them in seeking health care. The main aim of this program was to make healthcare more accessible and also to make students understand the community and develop a community-based orientation, community needs assessment[8]. Given the inception of Family Adoption Programme a health camp was organized to collect information on sociodemographic characteristics and to screen some noncommunicable diseases.

The main objective of the study was to assess sociodemographic profile and assessment of some noncommunicable diseases like Diabetes, Hypertension, Obesity among the camp beneficiaries. In addition to helping plan, relevant prevention and disease control measures and forecast the future course of the epidemic, understanding the sociodemographic patterns of non-communicable disease risk factors in rural areas may also yield new aetiological insights.

MATERIALS AND METHODS

Study Design: The study was Community based Cross-Sectional Study.

Study Setting: The present study was carried out in Rural area of Latur, Khadgaon comprising of 350 households.

Period of Study: The study was conducted based on the findings of health camp conducted as part of Family Adoption Programme on 16th July 2024.

Sampling Unit: Population from Khadgaon area of Latur.

Sample Size: All the individuals who attended the Health Camp were included in the study. Ethical committee approval was taken before starting the study.

Data Collection: Interviewer administered semi structured questionnaires were used to collect demographic data on individual and household Socio-economic indicators. Lifestyle and Health profile of each individual was assessed by using World Health Organisation (WHO) step wise approach. Standardised procedures were used for all biochemical and physical measurements.

Height was measured using stadiometer to the nearest 0.1 cm. The subjects were without shoes, stood with heels, buttock and occiput touching the wall. Instruction was given to look straight while measuring. Weight was measured using digital weighing machine. The weighing machine was on a firm and horizontal surface. The zero was checked every time. The subject was asked to stand on the weighing machine looking forward and weight was recorded to the nearest one kilogram, rounding up if midway.

Waist circumference was measured, by asking the subject to stand in erect posture and placing the tape horizontally around the waist measured at midpoint between the lower border of the rib cage and the iliac crest. Hip circumference was measured to the nearest 0.1 cm using a flexible narrow non stretch tape standing straight. It was measured at the largest circumference around the buttocks.

Waist Hip Ratio (WHR)[9]: As recommended by WHO, waist to hip ratio had been categorized as Normal or

high. WHR ≥0.90 and ≥0.85 was considered as high and among males and females respectively.

Body Mass Index[9]**:** Body mass index was calculated by dividing the weight in kilogram by height in a meter square. For analytical purposes, BMI <18.5 was considered as underweight, 18.5-24.9 as normal range and 25.0-29.9 as overweight ,30.0-34.9 as Obese Class I, 35.0-39.9 as Obese Class II and ≥40.0 as Obese Class III.

Blood Pressure Measurement[10,11,12]**:** The blood pressure readings were taken as per guidelines by the Sixth Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure using digital BP apparatus Two or more readings, separated by two minutes intervals, averaged. If, first two readings differ by >5 mm. Hg, additional readings were obtained and averaged.

Hypertension: Systolic blood pressure >140 mm of Hg and/or diastolic blood pressure >90 mm of Hg or a subject on anti-hypertensive treatment was regarded as hypertensive.

Blood Glucose Estimation[13]**:** All individuals above the age of 18 were evaluated for random blood sugar level with one touch glucometer. Random blood sugar level below 140 mg/dl was considered as nondiabetic. Blood sugar level between 140-199 md/dl was considered as prediabetic and blood sugar level ≥200 mg/dl was considered as diabetic (who (2006) diabetes diagnostic criteria).

Out of the study participants, 5 individuals were not willing for random blood sugar level examination Haemoglobin estimation was done using Sahli's haemoglobinometer. According to WHO criteria hemoglobin level <12.0 g/dl was considered as anemic among women and <13.0 g/dl were considered anemic among men.

Urine sugar and Urine albumin estimation was done using dipstick method of urine analysis. The health education regarding causation, consequences, diagnosis, prevention and control of diabetes mellitus, Hypertension, anemia, obesity, Importance of diet and regular exercise was given.

Those subjects who were newly classified as having diabetes mellitus and hypertension were referred to the outpatient department under department of medicine for further evaluation and management.

Data Analysis: Data entered Microsoft excel. Data was summarized using Descriptive statistics like frequencies, percentages, mean and standard deviation. Association between risk factors and diabetes/hypertension/anaemia and obesity were analysed by bivariate analysis with Chi square test in SPSS Version21.0. For all the statistical tests, the $p<0.05$ was considered statistically significant and the $p<0.01$ was considered statistically highly significant.

RESULTS AND DISCUSSIONS

Table 1: Sociodemographic Profile of the Study Participants.

Variable	Categories	Frequency	Percentage%
Age	1-5 years	16	10.60
	6-14 years	18	12.00
	15-45 years	43	28.70
	46-60 years	29	19.30
	>60 years	44	29.40
Gender	Male	61	40.67
	Female	89	59.33
Religion	Hindu	111	74.00
	Muslim	31	20.67
	Buddhism	6	04.00
	Others	2	01.33
Type of family	Nuclear	51	34.00
	Joint	77	51.33
	Three generation	22	14.67
Marital Status	Single	44	29.33
	married	86	57.33
	separated	4	02.67
	Widowed	16	10.67
Total		150	100

Table 1: Out of 150 individuals, majority 29.4 % were in the age group of more than 60 years, followed by 15-45 years which included 28.7%. Study participants belonging to the age group of 46-60 years were 19.3% and 12 % were between 6-14 years and least ,10.6% were between 1-5 years of age. As far as gender is considered majority (59.33%) were females and rest (40.67%) were males. With regards to religion,74% of the individuals were Hindu, 20.67% were Muslim ,4% were Buddhist and 1.33% were from other religions. According to type of family, 51.33% of the study participants were belonging to joint family, 34% were from nuclear family and remaining 14.67% were belonging to three generation family. Among the study participants 57.33% were married, followed by 29.33% were never married, followed by 10.67% were widowed and remaining 2.67% were separated.

Table 2: Distribution of Study Participants According to their Comorbidities.

Comorbidity	Categories	Frequency	Percentage %
Hypertension (n=116)	Yes	41	35.34
	No	75	64.66
Diabetes (n=111)	Yes	11	09.91
	No	100	90.09
Anemia (n=108)	Yes	21	19.44
	No	87	80.56
Cataract (n=116)	Yes	25	21.55
	No	91	78.45

Table no: 2 shows the distribution of study participants according their comorbidity status. Out of 116 adults, 35.4% were hypertensive. Prevalence of diabetes was found to be 9.91% according to random blood sugar level. Eight individuals did not give consent for complete blood count examination. Among 108 individuals who participated in Haemoglobin estimation, 19.44% were found as anaemic and

remaining 80.56% were normal. Ophthalmic examination was done for all the adult study participants. Among 116 individuals 21.55% were found to have cataract.

Table 3: Distribution of Participants According to Anthropometric Parameters.

Anthropometry		Categories	Frequency	Percentage
BMI (n=116)		<18.5	16	13.79
		18.5-24.9	61	52.58
		25-29.9	27	23.27
		>30	12	10.34
Abdominal Obesity	Males	Yes	27	65.85
		No	14	34.15
	Female	Yes	56	74.67
		No	19	25.33
MUAC (n=34)		<13.5	07	20.58
		≥13.5	27	79.42

Table no: 3 shows the distribution of the study participants according to their BMI. Majority of the participants (52.58%) were belonging to normal BMI category, 23.27% were found to be pre-obese and remaining 10.34% were obese. Prevalence of underweight was found as 13.79%. Abdominal obesity was found to be more prevalent among females (74.67%) compared to males (65.85). Among 34 paediatric study participants 20.58% were found to be malnourished according to Mid Upper Arm Circumference.

Our study outlines the socio demographic profile and the spectrum of non-communicable diseases among individuals presented at health camp at Khadgaon village. Majority of the participants were above 60 years of age. Whereas, from the study done by Wasnik[14] in the Amaravati district of Maharashtra, majority were from the age group of 36-45 years. Regarding gender, in the present study majority who attended health camp were females (59.33%). In contrast to this, the study done by Bhondve[15] showed that, out of the 358 camp beneficiaries, 52.7% were male beneficiaries and 36.1% were female beneficiaries. The camp was conducted in the week of Ekadashi which is the most celebrated occasion in Maharashtra, which entice people to visit pilgrimage places. This can be a reason for reduced participation of men in the health camp.

Higher number of participants were from joint family (51.33%) which is similar to the study findings by Wasnik[14], in which 48.68% individuals were belonging to joint family. Majority of the participants were following Hinduism in the present study (74.0%) which is similar to the study findings by Bhondve[15] in which 85.8% were Hindu.

The prevalence of hypertension 35.34%, in the present study was comparable to the study by Vijna and Mishra[16] but was in quite contrast to the studies by Soumitra Ghosh[17] and Venkatesh[18] and also to state averages of NFHS[5]. Studies carried out in rural parts of India by Anuj Jangra[19], Ashok Kumar[20], Anderson[21] and Sanjay Kalra[22] had a similar prevalence of diabetes that was found in the present study 9.91%.

The present study found overall prevalence of anemia as 19.44 percent, which was way less than study done by Tesfaye *et al.* in Ethopia[23], Matthew Little[24] in south India by and also from NFHS 4 and NFHS 5 data. It's lower prevalence in the study may due to limited sample size.

It was observed in our study that participants with cataract were 21.55 percent which was consistent with the findings of study done by Sumeer Singh[25]. However, the findings were in contrast to that of study carried by Merlin S J *et al.,* and Temesgen Wolde Kentayiso[26,27] where the prevalence of cataract was found to be 64.9 percent and 7.8 percent respectively. It is not possible to completely rule out confounding because information regarding the duration and categorization of the different forms of cataracts have not been done.

In the present study, majority of the participants (52.58%) were belonging to normal BMI category, followed by, 23.27% were found to be pre-obese and remaining 10.34% were obese. Prevalence of underweight was found as 13.79%. These findings are closely similar to the study done by Patil[28] in the Ramnagar city of Karnataka, in which About 46.1% had normal body mass index, 25.5% were overweight, 9.8% were obese and 18.6% were underweight. Prevalence of obesity is higher in the current study compared to NFHS 5 data, in which prevalence of obesity among men was 4.7% and among women was 6.3%29. The higher prevalence of obesity can be due to reduced physical activity, unhealthy eating habits and reduced awareness regarding healthy life style.

Abdominal obesity was found to be more prevalent among females compared to males from this study. This strongly supports the findings of NFHS-5, conducted between 2019 and 2021, that 40% of women in India were abdominally obese, compared to 12% of men[29]. Similarly, study done by Gupta RD et al.30 revealed that, the prevalence of abdominal obesity was higher among females (60.84%) compared to their male counterparts (54.78%).This can be because of more sedentary life style of females compared to males ,nature of reduced occupational activity of the jobs in which women are involved and lack of knowledge regarding healthy life style and need of regular physical activity. It can also be related to hormonal changes, parity and menstrual irregularities.

In the current study, among 34 paediatric study participants 20.58% were found to be malnourished according to Mid Upper Arm Circumference. The prevalence of undernutrition in the present study clearly showed a higher rate than the pre-school children of Jaffna, Sri Lanka in post-Exodus period[31].

That study had reported that the percentages of the preschool children under the age groups 5 years affected by severe and moderate acute malnutrition were 5.1% and 19.1%, respectively. In Indian context the prevalence of undernutrition was lower among the present study as compared to those reported from Punjab (38.5%)[32] and Orissa (58.0%)[33]. However, it was higher than urban children of Kolkata[34].

CONCLUSION

The study shows that prevalence of Diabetes and abdominal obesity was comparable to NFHS-5 statistics in rural Maharashtra. On the other hand, the prevalence of hypertension and obesity exceeded state averages. Different study setting, study subject characteristics, and time frame could account for variations in the degree of findings in the studies. This study considered findings from a single health camp with limited sample size. The results of the study will allow for a more accurate generalization of the findings, if multiple camp studies were conducted. The goal of the health camp was to provide the people living in rural area with affordable access to health care. The rural community were compounded by the triple burden of lack of awareness, subpar health-care facilities and health care costs. An attempt was made to address these issues by holding a health camp. Community involvement can expedite the process of prioritizing a given area's specific health care needs, which will aid in achieving universal health coverage.

Recommendation: These results highlight the need for focused efforts in terms of optimal nutrition, physical activity, Dietary modifications such as the DASH diet, and regular health check-ups to reduce the burden of non-communicable illnesses among rural populations.

REFERENCES

1. William, J. and R. Sunil, 2017. Socioeconomic Status and Non-Communicable Diseases in India: Evidence from NSS 2004 and 2014. 5: 277-289.
2. Nath, A., M.J. Shalini and P. Mathur, 2021. Health systems challenges and opportunities in tackling non-communicable diseases in rural areas of India. Nat. Med. J. India, 34: 29-35.
3. Swaminathan, K., G. Veerasekar, S. Kuppusamy, M. Sundaresan, G. Velmurugan and N. Palaniswami, 2017. Noncommunicable disease in rural India: Are we seriously underestimating the risk? the nallampatti noncommunicable disease study. Indian J. Endocrinol. Metab., 21: 90-95.
4. kta, B., P. Shalini and S. Supta, 2021. Anemia Prevalence in India Over Two Decades: Evidence from National Family Health Survey (NFHS). Intern Jou Scie Healt Res., 6: 335-340.
5. Mangla, M. and D. Singla, 2016. Prevalence of anaemia among pregnant women in rural India: A longitudinal observational study. Int. J. Reprod., Contra Obstet. Gynecol., 5: 3500-3505.
6. Balaji, A., L. Sanjana, D.S. Guna, P. Kuppuraj and T.S.S. Mohammed, 2022. A narrative review on the experience of “Family Adoption Programme” in a tertiary care institute. Jou Comm Hea Mana., 9: 54-59.
7. Faizi, N., M.S. Shah and S. Ahmad, 2024. Family adoption programme: Curricular and operational analysis amidst pre-existent programmes. Preve Med.: Res. & Rev., 1: 217-221.
8. World Health Organization (WHO). 2000. International Association for the Study of Obesity (IASO) and International Obesity Task Force (IOTF). The Asia-Pacific Perspective: Redefining Obesity and its Treatment. Geneva: World Health Organ., 378-420.
9. Chobanian, A.V., G.L. Bakris, H.R. Black, W.C. Cushman and L.A. Green,et al., 2003. The seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure<subtitle>the JNC 7 report</subtitle>. JAMA, 289: 2560-2572.
10. Mahmood, S.E., D. Prakash, J.P. Srivastava, Z.H. Zaidi and P. Bhardwaj, 2013. Prevalence of hypertension amongst adult patients attending out patient department of urban health training centre, department of community medicine, era’s lucknow medical college and hospital, lucknow. Jour Clin Diag Rese., 7: 652-656.
11. Wasnik, V.R. and A.K. Jawarkar, 2019. Morbidities of Patients Attending Free Health Camp in Rural Area of Amravati District of Maharashtra, India. Natl J Comm Med., 10: 218-222.
12. Pathak, B., A. Bhondve and R. Manapurath, 2019. Mixed-method analysis of community health camps: A novel approach beckoning. Indian J. Comm Med., 44: 233-237.
13. Vijna and P.M. Chandra, 2022. Prevalence and predictors of hypertension: Evidence from a study of rural India. Jour Fam Med Prim Care., 11: 1047-1054.
14. Ghosh, S. and M. Kumar, 2019. Prevalence and associated risk factors of hypertension among persons aged 15–49 in India: A cross-sectional study. BMJ Open, Vol. 9 .10.1136/bmjopen-2019-029714.
15. Venkatesh, U., A. Grover, B. Vignitha, G. Ghai and S. Malhotra et al., 2022. Urban–rural disparities in blood pressure and lifestyle risk factors of hypertension among Indian individuals. J. Family Med. Primary Care, 11: 5746-5756.

16. Jangra, A., J. Malik, S. Singh and N. Sharma, 2019. Diabetes in rural haryana, India: A population-based study. J. Med. Allied Sci., 9: 48-54.
17. Kumar, A., T. Bano, S.K. Garg, G. Singh and S. Kumar, 2020. Prevalence of diabetes mellitus in a rural population of north India. Int. J. Of Comm Med. And Pub Health, 7: 1465-1469.
18. Anderson, P., N. Grills, R. Singh, R. Singh, R.G. Evans, P. Sengupta and A.G. Thrift, 2019. Prevalence of diabetes and pre-diabetes in rural tehri garhwal, India: Influence of diagnostic method. BMC Public Health, Vol. 19 .10.1186/s12889-019-7184-4.
19. Kalra, S., R.M. Anjana, M. Verma, R. Pradeepa and N. Sharma et al., 2024. Urban–rural differences in the prevalence of diabetes among adults in haryana, India: The icmr-indiab study (icmr-indiab-18). Diabetes Ther., 15: 1597-1613.
20. Tesfaye, T.S., F. Tessema and H. Jarso, 2020. prevalence of anemia and associated factors among “apparently healthy” urban and rural residents in Ethiopia: A comparative cross-sectional study. J. Blood Med., 11: 89-96.
21. Little, M., C. Zivot, S. Humphries, W. Dodd, K. Patel and C. Dewey, 2018. Burden and determinants of anemia in a rural population in south India: A cross-sectional study. Anemia, 2018: 1-9.
22. Raman, R., S. Singh, S. Pardhan, V. Kulothungan and G. Swaminathan et al., 2019. The prevalence and risk factors for cataract in rural and urban India. Indian J. Ophthalmol., 67: 477-483.
23. Doss, M.S.J., P. Kalyani and A.J.W. Felix, 2021. Prevalence of cataract, its risk factors and the barriers to cataract surgery among older women in a rural population of cuddalore. Int. J. Of Comm Med. And Public Health, 8: 5338-5344.
24. Kentayiso, T.W., A.A. Alto, Z. Abebaw, D. Misker and W.G. Boynito, 2023. Cataract prevalence and its associated factors among adult people aged 40 years and above in south ari district, southern Ethiopia. Adv. Public Health, 2023: 1-9.
25. Patil, S.S., J.S. Seeri and N.S.D. M, 2019. Morbidity profile of the patients attending the health camp in ramanagar district, karnataka. Int. J. Of CommMed. And Public Health, Vol. 6 .10.18203/2394-6040.ijcmph20191854.
26. Gupta, R.D., N. Tamanna, N. Siddika, S.S. Haider, E.H. Apu and M.R. Haider, 2023. Obesity and abdominal obesity in Indian population: Findings from a nationally representative study of 698, 286 participants. Epidemiologia, 4: 163-172.
27. Elankumaran, C., 2003. Malnutrition in Preschool children of Jaffna Society– A Post-exodus statistical perspective. Paper presented in 9th International conference on Srilankan studies, University of Ruhuna, Srilanka.
28. Kaur, G., H.S. Kang, P. Singal and S.P. Singh, 2005. Nutritional status : Anthropometric perspective of pre-school children. Anthropologist, 7: 99-103.
29. Mishra, B. and S. Mishra, 2007. Nutritional anthropometry and preschool child feeding practices in working mothers of central Orissa. Stud Home Comm Sci., 1: 139-144.
30. Chatterjee, S. and S. Saha, 2008. A study on knowledge and practice of mothers regarding infant feeding and nutritional status of under-five children attending immunization clinic of a medical college. Internet J Nutrit Well., Vol. 5, No.1.