Original Research Article

Prevalence of lifestyle diseases among Hindu priests of Central India

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Received: 13-06-2020 / Revised: 17-07-2020 / Accepted: 20-08-2020

Abstract

Background: Major risk factors for lifestyle diseases are present with priest's lifestyle. Daily responsibility of priests includes, sitting mostly for long working hours & taking high calorie diet in form of Prasad. Predisposition to these may give rise to lifestyle diseases. **Aim:** To assess prevalence of lifestyle diseases (obesity & hypertension) among Hindu priests **Method:** A cross-sectional study done. Total sample size was 440. Simple random sampling was done. A pre-tested and semi-structured questionnaire contained Physical activity level (GPPAQ) & daily dietary calorie intake (24-hour recall). BMI & BP was measured. **Results:** Mean systolic & diastolic blood pressure of study participants were 131.25 ± 14.4 & 88.16 ± 10.4 respectively. 149(33.9%) of study participant were normal, 127(28.9%) High Normal, 108(24.5%) Grade 1 Hypertension, 32 (7.3%) in Grade 2 Hypertension& 24 (5.5%) were Optimal. Mean BMI of participants was 22.6 (SD ± 3.9). 277(63.0%) were normal, 88(20.0%) Pre-Obese, 47(10.7%) Underweight, 24(5.5% Obese Class I & 4 (0.9%) with Obese Class II. 188(42.7%) of study participant were inactive, 104(23.6%) moderately active, 88(20.0%) moderately inactive & 60(13.6) active. 224(50.9%) of study participant were having calorie intake over of recommended value, 176(40.0%) adequate intake & 40(9.1%) were deficient in their daily calorie intake. Statistically significant association was seen between hypertension with Obesity & Physical activity. **Conclusion:** Priests have an inactive lifestyle with high daily calorie intake which resulted in lifestyle diseases like obesity (6%) & hypertension (32%).

Key words: Priest, Obesity, Hypertension, level of physical activity, Ujjain.

Introduction

Lifestyle is a behavioral pattern which we routinely adopt & the way we tend to live our daily life.Major life style diseases are obesity, hypertension, heart diseases, D.M, oral/ lung cancer, STD's, asthma, bronchitis, accidents & many more. Major risk factors for lifestyle diseases are lack of physical activity, faulty dietary habits and sedentary lifestyle. Most of these risk factors are present with priest's lifestyle & predisposition to which may give rise to lifestyle diseases.

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Ujjain being a religious city with around 327 registered temples[1]distributed throughout the city, large numbers of people are indulged in priesthood as an occupation. Priests are identified as pandits, purohits or pujaris amongst devotees[2].Daily responsibility of priests includes early awakening, sitting mostly for long working hours, praising the deity with singing prayers, distribution of Prasad after presenting to deity. This is repeated everyday as a part of their social duty[3]. They have got very few hours of sleep with no holiday even on Sunday or at festivals. They are supposed to take high calorie diet in form of Prasad (everyday) & in religious ceremonies (occasionally). This lifestyle may affect their health status & give rise to various lifestyle diseases. After the 20th century, an increasing number of lifestyle diseases had been especially focused by

policy makers and allied health personnel. Effects of lifestyle of priests is an unexplored area, which on getting to know will shed light on the priority setting of disease prevention, health promotion and planning.

Aims: To assess prevalence of lifestyle diseases (obesity & hypertension) among Hindu priests

Subjects and Methods

The study is a descriptive, cross-sectional in design, and it was started after the approval from the ethical & research guidance committee of the institute. Baseline information about the number of temples & officially registered priests were collected from the authentic source, and permission was taken from the higher authorities to conduct our study. Each participant was described regarding the objectives of the study, its benefits, risks, and confidentiality in the local language (Hindi). They were informed that their participation was completely voluntary and that they were free to refuse any question or to withdraw at any time from the study. Written consent was taken. The study was carried out in the registered temples of Ujjain city, for 2 months from 1st February 2020 to 20th March 2020. Registered Hindu Priests working in temples of Ujjain city were included in our study.There were total of 327 registered temples along with **1032** registered priests working in it. Sample size was calculated by the formulae $N = (1.96)^2 PQ/L^2$. Where N is sample size, P is prevalence rate, Q is 100 % prevalence rate & L is absolute precision (5%). As exact prevalence of occupational injuries in priests was not known, it was assumed as 50 % with 5% required absolute precision & 95% confidence limit. So calculated sample size was 384 & with adding a non-response rate of 10%, sample size came as 422. So finally, a round figure of 440 was taken. Simple random sampling technique was applied & 440 computer generated random numbers were selected from the list of registered priests in Ujjain city.A bilingual community physician did a translation of the questionnaire from English to the Hindi language. Another independent bilingual community physician translated the Hindi questionnaire back to the English language. The differences were noted, and the differences were sorted out by involving both the bilingual translators. Thus, a final Hindi version was used to carry out the study. A pilot study was conducted among the priests other than the study subjects to validate the above-translated questionnaire. Questionnaires were checked for completeness and correctness before entering into the worksheet. The above pre-tested and semi-structured questionnaire contained Physical activity level (by GPPAQ questionnaire)[4]& daily dietary calorie intake (by 24-hour recall method[5]). Height, Weight & BP was measured using the standard techniques. BMI & BP was calculated and classified according to WHO classification for obesity[6] & AHA classification for Hypertension[7].

Statistical analysis: Data validity was checked at the regular interval before data was entered into the worksheet of Microsoft excels. Chi-square test was used as a test of significance with the help of statistical software SPSS v.16. The p-value of <0.05 was considered as significant.

Results

Table 1:Distribution of study participants according to their Blood Pressure, B.M.I, level of physical activity & daily calorie intake

	Number of priests(N= 440)	Percent (%)
Blood Pressure		
Optimal	24	5.5
Normal	149	33.9
High Normal	127	28.9
Grade 1 Hypertension	108	24.5
Grade 2 Hypertension	32	7.3
Grade 3 Hypertension	0	0
B.M.I		
Underweight	47	10.7
Normal	277	63.0
Pre-Obese	88	20.0

Obese Class I	24	5.5
Obese Class II	4	0.9
Obese Class III	0	0
Level of physical activity		
Inactive	188	42.7
Moderately Inactive	88	20.0
Moderately Active	104	23.6
Active	60	13.6
Daily calories intake		
Deficient	40	9.1
Adequate	176	40.0
Over	224	50.9

Mean systolic & diastolic blood pressure of study participants were 131.25 ± 14.4 & 88.16 ± 10.4 respectively.Maximum number 149(33.9%) of study participant were normal followed by 127(28.9%) High Normal, 108(24.5%) Grade 1 Hypertension, 32 (7.3%) in Grade 2 Hypertension&minimum of 24 (5.5%) were Optimal. Taking Optimal, Normal &High Normal as Non-Hypertensive & Grade 1 Hypertension &Grade 2 Hypertension as Hypertensive, 140(31.9%) study participants were found hypertensive & 300(68.1%) were non hypertensive.Mean BMI of participants was 22.6 (SD ± 3.9). Maximum number 277(63.0%) of study participant were normal followed by 88(20.0%) Pre-Obese, 47(10.7%) Underweight, 24(5.5% Obese Class I & minimum of 4 (0.9%) with Obese Class II.Taking Underweight, Normal & Pre-obese as **Non-Obese** & obese Class I & Obese Class II as **Obese**, only 28(6.4 %) study participants were found obese & 412 (93.6%) were non obese. Maximum number 188 (42.7%) of study participant were inactive followed by 104(23.6%) moderately active, 88(20.0%) moderately inactive & minimum number of study participants 60(13.6) were found as active. Taking inactive & moderately inactive as inactive in one group & active & moderately active as active in another group).In the current study, 276(62.7%) study participants were found inactive & 164(37.3%) were found as active. Priests were asked about their dietary intake with the help of 24-hour dietary recall method & their calories were calculated. ICMR criteria for normal value of daily dietary calories for moderately active adults i.e. 46 k.cal/kg/day was followed.& depending. Above calories were considered as over & below it as deficient & results were interpreted[8].Mean dietary calorie intake per day by study participants was 2932.2(SD ± 343.6) k.cal /day. Maximum number 224(50.9%) of study participant were having calorie intake over of recommended value followed by 176(40.0%) with adequate intake & minimum of 40(9.1%) were found to be deficient in their daily calorie intake.

Table 2 :Relationship between Hypertension with Obesity & level of physical activity in study participants

	Hypertension		**Total**	**Chi square (x^2)**	**p value**
	Hypertensive	Non-Hypertensive			
Obesity					
Obese	16(57.2)	12(42.8)	28(100.0)		
Non-Obese	124(30.1)	288(69.9)	412(100.0)	8.84	0.003
Level of physical activity					
Inactive	104(37.7)	172(62.3)	276(100.0)		
Active	36(21.9)	128(78.1)	164(100.0)	11.7	0.001

Statistically significant association was seen between hypertensionwith obesity & Physical activity. Hypertension was higher inthose who were obese (57.2%) as compared to those of non-obese (30.1%). Hypertension was higher inthose who were inactive (37.7%) as compared to those with active lifestyle (21.9%).

Table 3 : Relationship between Obesity& daily Dietary Calories intake among study participants

Obesity	Daily Dietary Calorie intake			Total	Chi square (x^2)	p value
	Deficient	Adequate	Over			
Obese	0(0.0)	0(0.0)	28(12.5)	28(6.4%)	28.8	< 0.001
Non-Obese	40(100.0)	176(100.0)	196(87.5)	412(93.6%)		
Total	40(100.0)	176(100.0)	224(100.0)	440(100%)		

Higher prevalence of obesity was found in participants with over dietary calories 28(12.5 %) as compared to adequate & deficient calorie intake where none of the study participant was found obese. Association between obesity & dietary calorie intake in study participants was found statistically significant (p < 0.001)

Discussion

140 (31.9%) study participants were found hypertensive which was similar to other studies like 34.9% in Arun j patil et al (2013)[9]. But in some studies like in Bhuwadol et al (2007)[10] with 24.45% prevalence of hypertension was less than current study , which may be due less physical activity& high cholesterol diets of Priests.Mean BMI in study participants of current study was 22.6 (SD ± 3.9) which was similar to other studies with Mean BMI 22.56 (SD ± 3.2) in Arun j patil et al (20130 [9] , 24.6 (SD ± 4.3) in Bhuwadol et al (2007)[10]. Similar results for Prevalence of obesity of 6% (28) was seen in Thasanaphong Phairin et al (2007)[11] with 4.1% prevalence. Statistically significant correlation was seen between obesity & hypertension which was similarto other studieslike Ashish Parikh et al (2014) [12] & Uthakalla et al (2005)[13].276 (62.7%) study participants were found inactive which was somewhat similar to 54.4 % in Ranjit M Anjana et al (2013)[14] &43 % in Neil Haron et al (2013)[15].Study participants of present study were somewhat more inactive than in other studiesdue to sedentary lifestyles of Priests. Statistically significant correlation was seen in between level of Physical activity &prevalence of Hypertension which was similar to other studies like S.M.V Kumari et. al (2014)[16] & Ajeetbhadoria et al (2013)[17]. Statistically significant correlation was seen in between level of Physical activity &prevalence of obesitywhich was similar to studies like H Dave et.al (2013) [18] &Uthakalla et al (2005)[13].Mean dietary calorie intake per day by study participants was 2932.2(SD ± 343.6) k.cal/day which was more as compared other studies with 1649 ± 288 k.cal /day in Priyanka et.al (2014)[19] & 983± 309 k.cal /day in Megha Mittal et.al (2013)[20]. Difference in findings may be due to dietary habits of Hindu priests, who are supposed to have diets rich in calories which may be due to continuous intake of sweets 2 to 3 times a day in form of Prasad along with eating out in religious ceremonies & social gatherings twice or thrice a week.Statistically significant correlation was seen between dietary calorie intake & obesity which was similar to other studies like P Raghu Ramalu et.al (2013)[21] & Ranjana Tiwari et.al (2008)[22].

Conclusion

Most of study participant were having inactive lifestyle withhigh daily calorie intake which may have resulted in lifestyle diseases like obesity (6%) & hypertension (32%). So proper screening should be done for all the lifestyle diseases with properequipment's& laboratory investigations necessary to diagnose the hidden lifestyle diseases expected to be present in study participants along with dietary modification like low cholesterol diet, increased fruit intake&encouraging Physical activity in the form of daily exercise, yoga or just a walk for pleasure in order to change their sedentary life style.

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Source of Support:Nil
Conflict of Interest: Nil