ORIGINAL RESEARCH

An epidemiological study of hypertension and its association with lifestyle and behaviour risk factors among geriatric population in urban area of Faridkot

[1]Dr. Babita Rani, [2]Dr. Sanjay Gupta, [3]Dr. Gaganpreet Singh, [4]Dr. Urvashi Grover, [5]Dr. Rupali, [6]Mr. Baltej Singh, [7]Dr. Nishu Dhiana

[1]Junior Resident, [2]Professor, [3,4]Associate Professor, [5,7]Assistant Professor, [6]Lecturer, Department of Community Medicine, Guru Gobind Singh Medical College and Hospital, Faridkot, Punjab, India

Corresponding author
Dr. Urvashi Grover
Associate Professor, Department of Community Medicine, Guru Gobind Singh Medical College and Hospital, Faridkot, Punjab, India

ABSTRACT
Background: The trend of hypertension is constantly increasing among older population in India. In Punjab studies of the prevalence of hypertension are very few. **Aims:** -To estimate the prevalence of hypertension and its association with the lifestyle and behavior habits among geriatric population. **Material and methods:** Thestudy was conducted in urban field practice area among 180 elderly subjects.Thedata regarding hypertension, lifestyle and behavior risk factors was collected using pre – tested and validated semi structured questionnaires. The data was analyzedusing appropriate statistical test.**Results:**Prevalence among study participants was 47.8%. Physical activity type (p-value 0.001), and how often done per week (p-value 0.028), eating often outside food (p – value 0.004) were significant life style risk factor. **Conclusion:**Approximately half of the study subjects were hypertensive.Often eating from outside, and physical activity were significantly associated lifestyle and behavior risk factors. Whereas, no relationship was exhibited between alcohol drinking, tobacco smoking, type of diet, type of cooking oil used.
Keywords: Elderly, Hypertension, Lifestyle, Risk factors for Hypertension.

INTRODUCTION
Geriatric age groupis the population of the elderly people those who are 60 or above the age of 60 years(1).Demographic transition is defined as transition of population from high birth and death rates to low birth and death rates, which leads to the increase in population of old aged people(2). Recently, India has witnessed this demographic transition, with a reduction in crude birth rate, and increase in lifeexpectancy(3). Thusnon – communicable diseases (NCDs) like Hypertension (HTN), Diabetes Mellitus, Cancer, Stroke, and cardiovascular diseases increased(4) .
HTN can increase the risk of heart, brain, kidney and other diseases(3).Elderly in urban area are more vulnerable to various NCDs and their complications, due to life style and behavior factors like lack of required physical activity, daily work stress, busy life, lack of social support ensuing in stress, lonely parents in small families with kids at abroad, unhealthy dietary habits due to shortage of time to cook, use of alcohol and tobacco etc.(3).

Social variables such as income, housing, and urbanisation have a negative impact on behavioural risk factors. It is frequently linked to co-morbid conditions including obesity and overweight(5).Other risks for HTN are consumption of too much salt, alcohol, stress, old age, genetic factors related to family history (6).

Poorurban and rural infrastructure,low socioeconomic level, social disarray, unemployment, unfavourable job environments, illiteracy, unfavourable early life events, abnormal mother and child health, etc. are some of the social determinants of hypertension(7).

One of an important issue for public health in India is hypertension. Very few studies have examined the lifestyle risk factors and social determinants relevant to hypertension and its control in Punjab. Awareness, early detection, and timely start of treatment can help elderly and reduce or prevent hypertension caused

strokes and heart attacks as well as hundreds of thousands of premature deaths annually. Therefore, we planned to conduct this study to estimate prevalence of hypertension in old age group people residing in the urban field practice area of Guru Gobind Singh medical college, Faridkot and assess associated life style and behaviour risk factors related to hypertension development in geriatric population.

MATERIAL AND METHOD
Study setting
The study was conducted in urban field practice area of Faridkot.

Study period
The study was conducted over a period of one and half year.

Study design
Cross sectional study.

Study population
Geriatric population in urban field practice area of GGSM college.

Sampling
Sample Size:
Calculated based on this formula $Z^2 P (1-P) / d^2$

$n = \dfrac{3.84 \times 0.401 \times 0.599}{0.005625}$

n = 162.27
n is taken approximately 163
assuming 10 % non-response rate sample size of 180 was taken.
(Z = 1.96, P = 40.1% = 0.401, d = 7.5% absolute error).

Sampling frame
All the households of urban field practice area of GGSMC in Faridkot block.

Sampling unit
Sampling unit was household with elderly people of age group above 60 years.

Sampling technique
Required sample size was allocated among the urban field practice area of Faridkot using enlist of households from the ANM. Further allocated sample size from urban area was selected by using simple random sampling.

Study tool
Pre-tested and validated semi structured questionnaire was used for collection of relevant information from the patients with hypertension. Semi- structured tool designed had following sections: -

1. Socio-demographic profile
2. Life style behavioral factors
3. Physical activity
4. Medical history
5. Physical measures, Blood pressure and pulse
6. Mental health
7. Treatment compliance

Evaluation of the prevalence of hypertension among study participants and factors associated with it: According to the Joint National Committee on management of High Blood Pressure, was defined (eighth report). The right arm and left arm of the chosen subject's blood pressure was measured twice with a 5-minute interval using a fully automatic, digital blood pressure measuring instrument (Dr.Morepen BP One; model no. BP-16). The average of the two readings was obtained.

Methodology
The proposed study was conducted in urban field practice area of Faridkot block. Prior to commencement of study, house to house survey was conducted and urban area wise line list of households was made with geriatric people aged above 60 years.

After line- listing, unique identification number was allotted to each household, based on which the allocated sample size was randomly selected. Selected households were visited and informed. Written consent was taken from the patients with hypertension those who aged above 60 years who satisfy all the inclusion and exclusion criteria. If a household had more than one elderly person aged (> 60 years), all the elderly was included in the study. One to one interview of elderly person in family was held and relevant information regarding socio-demographic profile of the family, dietary habits and occupational history of the patients, past history of illness and treatment received, personal history and regularity of treatment was obtained from them. After interview, blood pressure was measured using standardized tools and record was made.

Inclusion criteria
- Elderly people aged above 60 years.

Exclusion criteria
- Elderly who refuse to give consent.
- Critically ill elderly individuals and unable to comprehend questions was excluded.

What are the recommended number of hours of sleep in a day for elderly?
Generally elderly require 7 to 9 hours of sleep per night, just like any other adult. Usually elderly people tend to sleep early and wake early as compared to their younger age sleep patterns (8).

What is the recommended quantity of the alcohol for the adults to drink per week?
Table 1:

Alcohol consumption	Low risk	High risk
Men	< 35 units per week	> 53 units per week
Women	< 17.5 units per week	> 36 units per week

(9)
No amount of alcohol is recommended by the WHO as safe. One unit is equals to 10 ml or 8 grams of absolute alcohol. This is approximately how much alcohol an adult can metabolise in an hour on average, although it varies from person to person. It means that in an adult after consumption of 1 unit of alcohol, little to no alcohol remains in their blood after an hour. The units of alcohol that are present in a drink depends on its quantity and strength of alcohol (10).

RESULTS
Socio – demographic profile
Table2: Distribution of subjects according to socio – demographic profile
(n = 180)

Variable	Frequency (n)	Percentage(%)
Age		
60 – 70	118	65.6
71 – 80	56	31.1
>80	6	3.3
Mean±SD	68.5±5.83	
Gender		
Female	98	54.4
Male	82	45.6
Marital status		
Married	124	68.9
Widow	56	31.1
Religion		
Hindu	49	27.2
Sikh	131	72.8

The table number 2 shows the distribution of subjects according to socio-demographic profile. Most of the participants 118 (65.6%) were belonging to age range between 60 to 70 years. The mean age was 68.5 years. The participants who were married were 124 (68.9%) and 56 (31.1%) were widow. No subject was divorced or single. Out of total subjects 98 (54.4%) were female and 82 (45.6%) were male. Majority were following Sikh religion 131 (72.8%).

Life style and behavioral factors
Table 3: Association of the hypertension with Life style behavioral factors
(n = 180)

Variable	Hypertension Yes	Hypertension No	Total	Chi - square Value	P – value
Alcohol use (n = 180)					
Yes	14	13	27		
No	72	81	153	0.211	0.646
Age when started drinking alcohol (n = 27)					
Before 20 years	7	6	13		
After 20 years	7	7	14	0.251	0.882
Quantity of alcohol use/week (n = 27)				Fisher's exact value	P - value
Low risk (<35 units/week)	4	9	13		
High risk (>36 units/week)	10	4	14	4.538	0.101

The table number 3shows the association between life style behaviour factors like alcohol and tobacco use with hypertension. The alcohol drinking, age when started drinking early or later than 20 years, and the amount drunk

were assessed. On application of suitable statistical test, these factors came out to be insignificantly associated (p -value > 0.05).

Table4: Association of hypertension and tobacco use risk factor.

Use Tobacco (n = 180)					
Variable	Hypertension Yes	Hypertension No	Total	Fischer's exact value	P- value
Yes	4	5	9		
No	82	89	171	0	1.0

Table 4 shows 9 out of 180 participants were smoker, out of 9 smokers 4 were hypertensive. The association between the two came out to be insignificant (p-value >0.5). The association between hypertension status, alcohol and tobaccouse was insignificant, it can be due to religious believes as majority of them belong to Sikhism (72.8%), and other reason can be due to gender as majority of participants are females (54.4%).

Table 5: Association of the hypertension with dietary habits

Variable	Hypertension Yes	Hypertension No	Total	Fisher's exact value	P -value
Dietary habits					
Vegetarian	42	51	93		
Non – vegetarian	39	39	78	0.678	0.746
Eggetarian	5	4	9		
Oil used for cooking					
Mustard	78	87	165		
Coconut oil	0	0	0		
Refined	7	7	14	1.109	0.781
Sesame oil	0	0	0		
Any oil which we get	1	0	1		
How often you eat from outside					
Mostly	6	1	7		
Rarely	18	7	25	**12.532**	**0.004**
Occasionally	5	4	9		
Never	57	82	139		
How often you eat processed food high in salt					
Always	1	1	2		
Mostly	4	1	5	5.090	0.127
Rarely	43	37	80		
Never	38	55	93		

The table5shows the association of the hypertension with the dietary habits. Most of the subjects i.e. 93 out of 180 were vegetarians out of which 42 were hypertensive, rest 78 were non – vegetarian out of which 39 were hypertensive. Most of the subjects i.e. 165 out of 180 were using mustard oil for cooking. 139 subjects out of 180 were used to never eat from outside and 93 subjects never eat processed food high in salt. The dietary preferences and who were eating processed food high in salt was came out nonsignificant risk factor on applying suitable statistical test (p -value >0.05). However, subjects who were eating from outside often came out to be associated with occurrence of hypertension significantly **(p -value = 0.004)**.
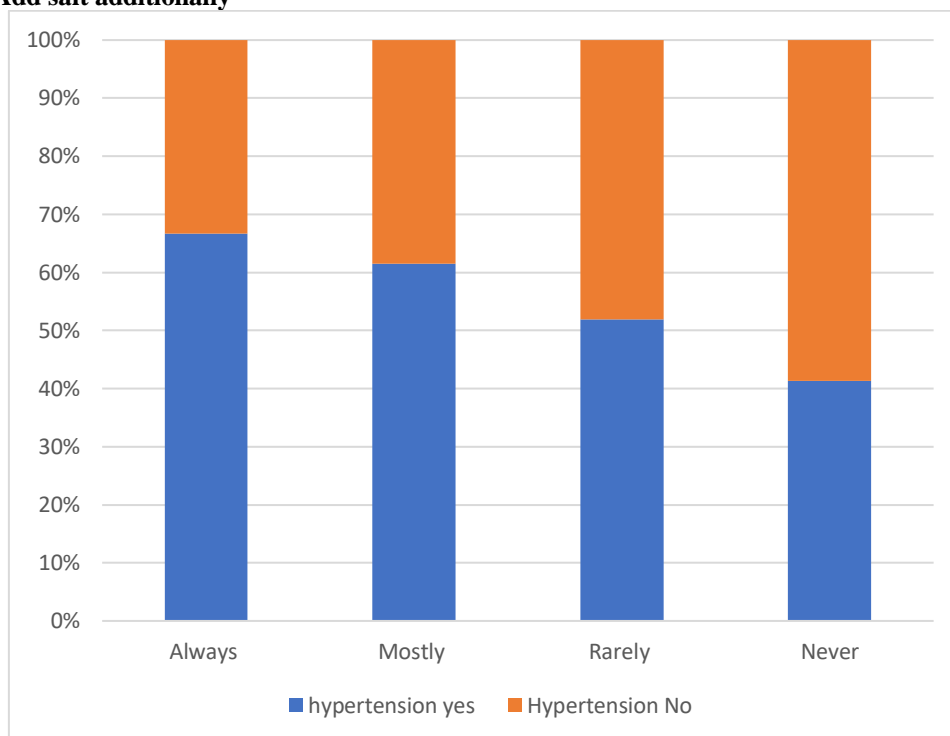
Figure 1: Add salt additionally

Figure 1 shows majority of them i.e. 87 out of 180 subjects never added table salt additionally in their food. who were using table salt additionally in their food was came out nonsignificant risk factor on applying suitable statistical test chi- square value 3.443 and p -value 0.332 (p -value >0.05).

Physical activity

Table 6: Association of the hypertension with the physical activity

(n = 180)

Variable	Hypertension Yes	Hypertension No	Total	Fisher's exact value	p-value
Type of physical activity					
Cycling	9	10	19	**15.828**	**0.001**
Jogging	0	10	10		
Walking	35	47	69		
None	42	27	82		
How often done physical activity					
1 – 3 times/week	10	20	30	**11.717**	**0.028**
3 – 5 times/week	4	12	16		
5 – 7 times/week	22	22	44		
Inconsistently	8	13	21		
None	42	27	69		

Table 6 illustrates out of 180 subjects almost half of them 82were not doing any kind of physical work out for self, followed by, 69 subjects that were doing walking as physical activity. Most of them were doing it 5 -7 times per week. On applying fisher's exact test, the type of physical activity and how often doneassociation came out to be highlysignificant **(p -value 0.001 and 0.028 respectively)**.

Figure 2: Association between number of hours of sleep and hypertension (n=180)

Association of number of hours of sleep and Hypertesnion
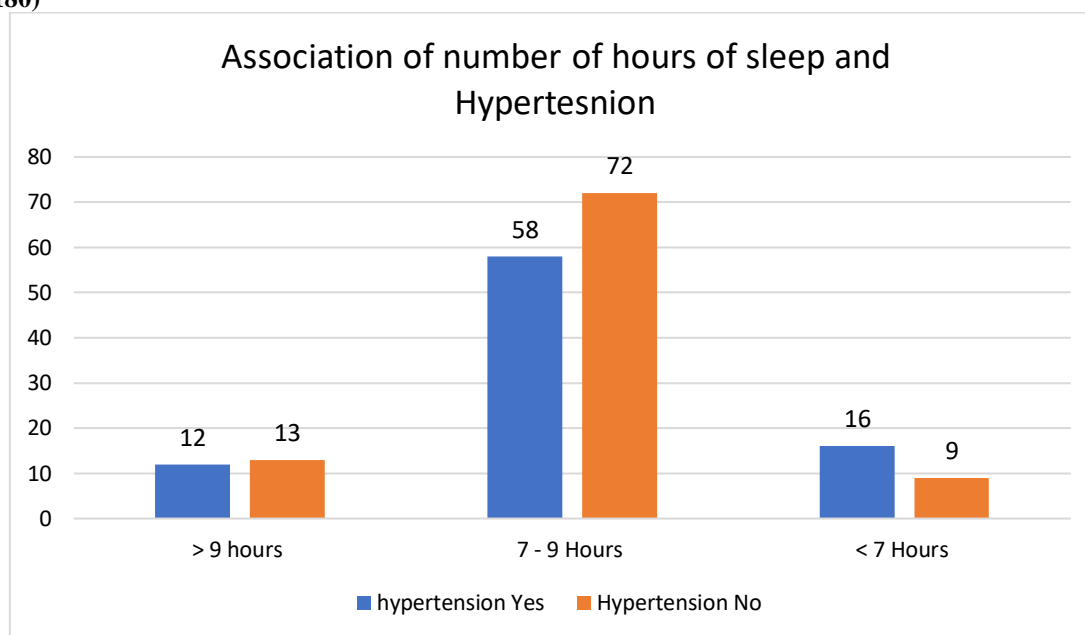
Out of 180, most of the subjects were sleeping for adequate number of hours per day i.e. 7 – 9 hours per day. Those who were sleeping less or more than recommended hours were equal i.e. 25 each. Out of 25 subjects who were sleeping less than recommended hours 16 were hypertensive while those who were sleeping more than recommended hours 12 were hypertensive out of 25. On applying chi-square test the association came out to be insignificant (p -value > 0.05).

DISCUSSION
Hypertension is one of the most important treatable causes of death and morbidity in elderly.
In present study, it was observed that the majority, 65.6% of the subjects, were aged between 60 – 70 years.The mean age of the study subjects was 68.5 years. Majority (54.4%) of the study subjects were female.Majority 68.9% of the subjects were married and rest 31.1% were widows. None of the subject was single nor divorced or separated.Most of the subjects were belonged to Sikh religion 72.8 %, followed by 27.2% Hindu religion. None of the subject was from Christianor Muslim religion. Majority of the subjects (67.8%) were belonged to the joint family type, out of whom 31.7% were hypertensive. Type of family is insignificant risk factor in current study.
In our study the age, gender, marital status, religion and family type are statistically insignificant risk factors. This is consistent with the research carried out by **N. Omar et al.** (11)**.** In contrastto the study conducted by **R. Yunanto et al.,** in whichall these were significantly associated risk factors (p -value <0.05)(12).Whilein study of, **A. Sutriyawan et al.** and **J. Sharma et al.** onlyage and gender were significant risk factors (13,14)**.**

In current study 15% were alcoholic, half of them started to drink after 20 years of age, and only 5% were using tobacco. Both the risk factors were statistically insignificant (p -value >0.05).This was in keeping with findings from the study of**M. Kurjogi et al., N. Omar et al., U. Kapil et al., R. Arellano et al.** (11,15–17).Unlike our research, the study done by**J. Tripathy et al.**shown alcohol was associated statistically significant risk factor (p -value 0.01) but tobacco was insignificant (18).**D. Bharati et al., X. Huang et al.** shown both risk factors were significantly associated with hypertension (p -value <0.001) (19,20). In the present study, the reason for insignificant results may be because majority of subjects in our study were female, and most of the subjects were Sikh by religion. Hence alcohol and tobacco came out to be insignificant risk factors.
In our study half of the subjects were vegetarians,Dietary habit was non-significant risk factor for HTN, while those who were eating often from outside were more at risk for hypertension which is statistically significant **(p -value 0.004)**. No association with high salt intake was found in current study. Which was in line with study of **M. Saka et al.** (21). In contrast study of **K. Das et al.** shows diet as significant risk factor. Where stage 1 and 2 HTN was more prevalent in non – vegetarians compared to prehypertension in vegetarians (22), **C. Mitra et al.** showed those who were non – vegetarians tend to be less hypertensive (5), **M. Kang et al**., **A. Sutriyawan et al. and J. Tripathy et al.** shown the increased salt intake was significant risk factor (p -value < 0.05) (13,23,24). The difference in dietary pattern and hypertension status can be due to the different methods of cooking and variety of the non – vegetarian diet used, physical activity, and various environmental factors.

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In our study, majority of subjects were engaged in regular exercises in form of walking, cycling, and jogging. The association between type of physical activity, how often physical activity done and risk of hypertension is statistically highly significant with **(p value = 0.001)** and **(p -value 0.028)** respectively. Which is in line with study conducted by **X. Huang et al., I. Quasem et al., R. Yunanto et al., A. Sutriyawan et al.,**(12,13,20,25). In contrast the study conducted by **U. Kapil et al**., and **A. Sousa et al.** showed thatthe physical activity was insignificant risk factor (p -value > 0.05) (16,26). This difference in studies can be due to different type of interview method that were used to assess the physical activity, persons perception of physical activity.

In present study the hypertension prevalence was 47.8%. It was more prevalent in females than males. The results were in parallel to our study among **R. Yunanto et al.** whereHTN was more prevalent in females (12). In contrast to current study **S.Ramakrishnan, et al.** showed 30.7% prevalence of HTN with male predominance (24) and **M. Kurjogy et al.** study done at Karnataka shown 65.6% prevalence of HTN with male predominance (15). This difference in prevalence and gender may be due to regional difference, dietary preferences, behavioral habits and life style variations.

SUMMARY AND CONCLUSION

- Prevalence of the hypertension in the current study population was 47.8%.
- On statistical analysis by Chi-square test & fisher's exact test:Association of study subject's "How often you eat from outside" (P Value=0.004), Type of physical activity (P Value=0.001),How oftenphysical activity done (P Value=0.028) were statistically significant.

Data analysis plan
Data analysis:
The Collected data was analysed in MS excel and SPSS software version 26. The results were interpreted by using suitable statistical tests.

Ethical considerations
Ethical approval for this study was taken from the institutional ethical committee prior to start of the study. Informed written consent was obtained before each interview from the elderly people who are hypertensive. Any elderly found to be hypertensive was given counselling for diet, physical exercise, timely treatment and treatment adherence.

Conflicts of interest
There are no conflicts of interest.

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