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ORIGINAL RESEARCH

Prevalence of hypertension among pharmaceutical sales team members: A cross-sectional study

Rajeev Garg[1], Nirmal Kumar[2], Amit Gupta[3], Shweta Ghatge[4], Sagar Patil[5]

[1]Department of Cardiology, Gleneagles Global Hospitals, Hyderabad, India
[2]Department of Cardiology, Renova Century Hospital, Hyderabad, India
[3]Assistant General Manager, Scientific Services, USV Pvt Ltd, Mumbai, India
[4]Deputy Manager, Scientific Services, USV Pvt Ltd, Mumbai, India
[5]General Manager, Marketing, USV Pvt Ltd, Mumbai, India

Corresponding author
Shweta Ghatge
Deputy Manager, Scientific Services, USV Pvt Ltd, Mumbai, India
Email: ghatgeshweta.15@gmail.com

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ABSTRACT

Background: Hypertension is a major public health concern, and it is essential to investigate whether the work patterns of pharmaceutical sales teams contribute to a higher risk of high blood pressure. Therefore, the present study aimed to assess the prevalence of hypertension among pharmaceutical sales team members. **Methods:** This cross-sectional study was conducted at multiple sites across India, focusing on pharmaceutical sales team members in the pharmaceutical industry. Data on demographic and clinical characteristics were collected from the participants. **Results:** A total of 2819 participants were included in this study. The mean (SD) age of participants was 32.2 (7.3) years. Majority of participants (51.0%) were in the age group of >30 years, while 49.0% of participants were in the age group of≤30 years. The mean systolic blood pressure (SBP) and diastolic blood pressure (DBP) of the participants were 128.1 mmHg and 82.6 mmHg, respectively. Participants with SBP >140 mmHg and DBP ≤80 mmHg were comparable in all the regions. Participants with DBP ≤80 mmHg was significantly higher in the age group of ≤30 years compared to the age group of >30 years (P<0.001). The mean SBP and DBP were comparable between male and female participants. **Conclusion:** The study finds a significant prevalence of hypertension among pharmaceutical sales team members, influenced by age and region. Targeted health interventions are essential to improve awareness and management of hypertension in this workforce.

Keywords: Hypertension, pharmaceutical sales team, blood pressure.

INTRODUCTION

Hypertension is characterized by a sustained increase in systolic blood pressure (SBP) to 140 mmHg or higher, and/or diastolic blood pressure (DBP) to 90 mmHg or above [1]. It is a key modifiable risk factor for cardiovascular disease (CVD), and one of the major contributors to premature death and morbidity [2]. In India, over 1 in 4 individuals suffer from hypertension, and more than 90% of adults with the condition are either unaware of it, not receiving treatment, or undergoing treatment but still have uncontrolled hypertension [3].

Hypertension is becoming more common worldwide, driven by an aging population and increased exposure to lifestyle risk factors, including unhealthy diets with high sodium and low potassium levels [4]. Work-related stress has been identified as an independent risk factor in the development of coronary heart disease and elevated hypertension risk across various occupations. High job strain may account for 21% to 32% of hypertension cases [5]. Variations in the prevalence of hypertension across different occupations are likely influenced by differences in risk factors such as lifestyle habits, lack of physical activity, and obesity [4].

A substantial portion of the pharmaceutical workforce consists of peripatetic sales staff, who make up 5 to 20% of employees in individual companies. Their key responsibility is to promote and market both new and existing products successfully. However, offering occupational health support for these workers poses a challenge, as they often work in isolation and spend much time driving [6].

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The study conducted by Goyal P et al. identified several factors independently associated with hypertension among pharmaceutical sales team professionals, including the age, smoking or alcohol consumption, longer employment duration, abnormal levels of total cholesterol, triglycerides, or low-density lipoprotein cholesterol (LDL-C), as well as the presence of diabetes or obesity [7].

Studying the prevalence and contributing factors of hypertension among pharmaceutical sales team members is crucial, as it can significantly affect their well-being and job performance. Furthermore, identifying the health issues related to these professionals is vital, as it enables occupational health professionals to devise and implement strategies to effectively address these concerns [6]. Therefore, the present study aimed to assess the prevalence of hypertension among pharmaceutical sales team members.

METHODS

This cross-sectional study was conducted at multiple sites across India, focusing on pharmaceutical sales team members in the pharmaceutical industry. Data on demographic and clinical characteristics were collected from the participants.

Statistical analysis

Data were analyzed using Statistical Package for the Social Sciences (SPSS), version 23. Descriptive statistics was used to describe categorical variables (frequency and percentages) and continuous variables (mean and standard deviation [SD]). Comparison of qualitative data between the groups was done using Kruskal–Wallis test and 2 Independent Sample t-Test. Comparison of quantitative data between the groups was done using Chi-square test. A P value of <0.05 was considered statistically significant.

RESULTS

The mean age was significantly higher in the east region compared to the south, north and west region (34.3 years vs. 32.9 years vs. 31.9 years vs. 31.1 years; P<0.001). Participants aged >30 years were significantly higher in the east region compared to the south, north and west region (60.2% vs. 53.2% vs. 50.5% vs. 44.5%; P<0.001). The mean SBP and DBP were comparable between all the regions. Participants with SBP >140 mmHg and DBP ≤80 mmHg were comparable in all the regions (Table 2).

Male participants were significantly higher in the age group of ≤30 years compared to the age group of >30 years (98.3% vs. 97.0%; P=0.020). Participants from the north region were significantly higher in age group of ≤30 years compared to the age group of >30 years (40.7% vs. 39.8%; P<0.001). The mean weight of the participants aged >30 years was significantly higher compared to the participants aged ≤30 years (76.3 kg vs. 72.3 kg; P<0.001). The mean SBP and DBP were significantly higher in the participants aged >30 years compared to the participants aged ≤30 years (128.7 mmHg vs. 127.5 mmHg and 83.8 mmHg vs. 81.5 mmHg; P=0.036 and P<0.001, respectively). The proportion of participants with SBP >140 mmHg was higher in the age group of >30 years. Participants with DBP ≤80 mmHg was significantly higher in the age group of ≤30 years compared to the age group of >30 years (48.6% vs. 40.7%; P<0.001) (Table 3). The pulse rate was comparable between both the groups (Table 3).

Female participants had significantly higher mean age compared to the male participants (35.0 years vs. 32.2 years; P=0.002). The female participants were significantly higher in the age group of >30 years compared to the male participants (65.2% vs. 50.7%; P=0.020). Majority of female participants were from the north region (42.4%). The mean height and weight of the male participants were significantly higher compared to the female participants (P=0.003 and P=0.029, respectively). The mean SBP and DBP were comparable between male and female participants. The participants with SBP >140 mmHg and DBP ≤80 mmHg were comparable between male and female participants. The pulse rate was comparable between both the groups (Table 4).

Table 1: Demographics characteristics

Parameters	Number of participants (N=2819)
Age (years)	32.2 (7.3)
Age groups, n (%)	
≤30 years	1380 (49.0)
>30 years	1439 (51.0)
Sex, n (%)	
Male	2753 (97.7)
Female	66 (2.3)
Region, n (%)	
East	384 (13.6)
West	665 (23.6)
North	1134 (40.2)
South	636 (22.6)
Height (cm) (n=1570)	170.2 (9.9)

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Weight (kg) (n=1575)	74.4 (11.9)
SBP (mmHg) (n=2817)	128.1 (30.1)
SBP, n (%)	
≤120 mmHg	890 (31.6)
>120 - ≤130 mmHg	816 (29.0)
>130 - ≤140 mmHg	704 (25.0)
>140 mmHg	407 (14.4)
DBP (mmHg) (n=2817)	82.6 (10.6)
DBP, n (%)	
≤80 mmHg	1255 (44.6)
>80 - ≤85 mmHg	583 (20.7)
>85 - ≤90 mmHg	459 (16.3)
>90 mmHg	520 (18.5)
Pulse (bpm)	81.9 (11.4)
Data presented as mean (SD), unless otherwise specified. DBP, diastolic blood pressure; SBP, systolic blood pressure.	

Table 2: Region wise comparison of demographic parameters

Parameters	East (n=384)	West (n=665)	North (n=1134)	South (n=636)	P value
Age (years)	34.3 (7.9)	31.1 (6.9)	31.9 (6.8)	32.9 (7.9)	<0.001
Age groups, n (%)					
≤30 years	153 (39.8)	369 (55.5)	561 (49.5)	297 (46.7)	<0.001
>30 years	231 (60.2)	296 (44.5)	573 (50.5)	339 (53.2)	
Sex, n (%)					
Male	378 (98.4)	649 (97.6)	1106 (97.5)	620 (97.5)	0.754
Female	6 (1.6)	16 (2.4)	28 (2.5)	16 (2.5)	
Height (cm)	[n=307] 168.8 (8.4)	[n=394] 171.5 (10.4)	[n=470] 170.2 (11.2)	[n=399] 169.8 (8.6)	<0.001
Weight (kg)	[n=308] 75.2 (11.7)	[n=395] 73.1 (11.6)	[n=471] 74.5 (11.4)	[n=401] 74.9 (12.8)	0.081
SBP (mmHg)	127. 1 (12.6)	[n=664] 128.2 (12.7)	[n=1133] 128.1 (12.8)	128.6 (14.0)	0.310
SBP, n (%)					
≤120 mmHg	140 (36.5)	205 (30.9)	364 (32.1)	181 (28.5)	0.339
>120 - ≤130 mmHg	108 (28.1)	193 (29.1)	331 (29.2)	184 (28.9)	
>130 - ≤140 mmHg	88 (22.9)	166 (25.0)	271 (23.9)	179 (28.1)	
>140 mmHg	48 (12.5)	100 (15.1)	167 (14.7)	92 (14.5)	
DBP (mmHg)	82.5 (10.8)	[n=664] 83.3 (10.8)	[n=1133] 82.3 (10.1)	82.7 (11.1)	0.528
DBP, n (%)					
≤80 mmHg	185 (48.2)	294 (44.3)	503 (44.4)	273 (42.9)	0.753
>80 - ≤85 mmHg	73 (19.0)	127 (19.1)	243 (21.4)	140 (22.0)	
>85 - ≤90 mmHg	57 (14.8)	109 (16.4)	184 (16.2)	109 (17.1)	
>90 mmHg	69 (18.0)	134 (20.2)	203 (17.9)	114 (17.9)	
Pulse (bpm)	83.2 (11.3)	82.5 (11.6)	81.5 (10.7)	81.4 (12.2)	0.017
Data presented as mean (SD), unless otherwise specified. DBP, diastolic blood pressure; SBP, systolic blood pressure.					

Table 3: Association of age with demographic parameters

Parameters	Age groups		P value
	≤30 years (n=1380)	**>30 years (n=1439)**	
Sex, n (%)			
Male	1357 (98.3)	1396 (97.0)	0.020
Female	23 (1.7)	43 (3.0)	
Region, n (%)			
East	153 (11.1)	231 (16.1)	<0.001
West	369 (26.7)	296 (20.6)	
North	561 (40.7)	573 (39.8)	
South	297 (21.5)	339 (23.6)	

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Height (cm)	[n=744] 170.1 (10.9)	[n=826] 170.2 (8.9)	0.282
Weight (kg)	[n=741] 72.3 (12.2)	[n=834] 76.3 (11.3)	<0.001
SBP (mmHg)	[n=1379] 127.5 (12.5)	[n=1438] 128.7 (13.6)	0.036
SBP, n (%) ≤120 mmHg >120 - ≤130 mmHg >130 - ≤140 mmHg >140 mmHg	 444 (32.2) 421 (30.5) 328 (23.8) 186 (13.5)	 446 (31.0) 395 (27.5) 376 (26.1) 221 (15.4)	0.117
DBP (mmHg)	[n=1379] 81.5 (10.3)	[n=1438] 83.8 (10.8)	<0.001
DBP, n (%) ≤80 mmHg >80 - ≤85 mmHg >85 - ≤90 mmHg >90 mmHg	 670 (48.6) 294 (21.3) 206 (14.9) 209 (15.2)	 585 (40.7) 289 (20.1) 253 (17.6) 311 (21.6)	<0.001
Pulse (bpm)	82.2 (11.4)	81.7 (11.3)	0.476
Data presented as mean (SD), unless otherwise specified. DBP, diastolic blood pressure; SBP, systolic blood pressure.			

Table 4: Association of gender with demographic parameters

Parameters	**Sex**		**P value**
	Male (n=2753)	**Female (n=66)**	
Age (years)	32.2 (7.3)	35.0 (8.3)	0.002
Age groups, n (%) ≤30 years >30 years	 1357 (49.3) 1396 (50.7)	 23 (34.8) 43 (65.2)	0.020
Region, n (%) East West North South	 338 (13.7) 649 (23.6) 1106 (40.2) 620 (22.5)	 6 (1.6) 16 (24.2) 28 (42.4) 16 (24.2)	0.754
Height (cm)	[n=1560] 170.2 (9.9)	[n=10] 160.8 (9.1)	0.003
Weight (kg)	[n=1565] 74.4 (11.8)	[n=10] 66.2 (16.9)	0.029
SBP (mmHg)	[n=2751] 128.1 (13.1)	 129.4 (11.2)	0.421
SBP, n (%) ≤120 mmHg >120 - ≤130 mmHg >130 - ≤140 mmHg >140 mmHg	 877 (31.9) 792 (28.8) 682 (24.8) 400 (14.5)	 13 (19.7) 24 (36.4) 22 (33.3) 7 (10.6)	0.076
DBP (mmHg)	[n=2751] 82.6 (10.6)	 82.8 (9.7)	0.877
DBP, n (%) ≤80 mmHg >80 - ≤85 mmHg >85 - ≤90 mmHg >90 mmHg	 1229 (44.7) 566 (20.6) 449 (16.3) 507 (18.4)	 26 (39.4) 17 (25.8) 10 (15.2) 13 (19.7)	0.717
Pulse (bpm)	81.9 (11.3)	81.2 (12.1)	0.596
Data presented as mean (SD), unless otherwise specified. DBP, diastolic blood pressure; SBP, systolic blood pressure.			

DISCUSSION

The pharmaceutical sales team makes up a notable portion of the industry's workforce and faces distinct occupational health challenges due to the specific nature of their roles and organizational setup. These employees frequently work in isolation, engage in

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itinerant work routines, and spend significant time traveling. These working conditions expose them to psychosocial and ergonomic risks, potentially impacting their overall health [6]. A key concern is hypertension, as irregular work hours, which are common in this sector, are linked to a heightened risk of high blood pressure [8].

In the present study, the mean age of participants was 32.2 years, and the majority of participants were in the age group of >30 years, with most being male. Similarly, in a study conducted by Ofori SN et al., the mean age of participants was 43.34 years, and the majority were in the age group of 41 to 50 years, with most participants being male [1]. In the current study, the majority of participants were from the northern region, whereas in a previous study, most participants were from the western region [9]. In the present study, 14.4% of participants had an SBP >140 mmHg, and 18.5% of participants had a DBP >90 mmHg. A study conducted by Sirinara P et al. reported that 39.3% of participants had an SBP ≥140 mmHg or a DBP ≥90 mmHg [8]. In a previous study, the mean SBP was 129.13 mmHg and the DBP was 79.31 mmHg [1]. In alignment with the previous study, the mean SBP and DBP in the current study were 128.1 mmHg and 82.6 mmHg, respectively.

In the present study, the prevalence of SBP >140 mmHg and DBP >90 mmHg was higher in the western region compared to the eastern, northern, and southern regions. This finding highlight a concerning disparity in hypertension awareness and personal health management among the pharmaceutical sales team. Given that high blood pressure is directly responsible for approximately 40% of the CVD burden, addressing this regional imbalance is crucial to improving overall cardiovascular health outcomes [10]. A study conducted by Anchala R et al. reported similar trends, noting that the urban western region of India showed a higher prevalence of hypertension compared to the urban northern, eastern, and southern regions [9].

In the current study, the male participants were significantly higher in the age group of ≤30 years compared to the age group of >30 years. In contrast, the previous study found that the majority of participants were female in the age group of 20 to 39 years[11]. Furthermore, in the present study, the mean SBP and DBP were significantly elevated in participants over 30 years old. This finding aligns with previous research that indicated the highest prevalence of hypertension was observed in the age group of 35–40 years, while the lowest prevalence was found among individuals aged 20–24 years [12]. These observations suggest that blood pressure is significantly influenced by age, underscoring the importance of monitoring hypertension in older individuals [13]. Additionally, another study found an age-related trend in absolute BP, showing a linear rise in SBP with age after 30 to 40 years [13].

In the present study, female participants were significantly higher in the age group of >30 years. A study done by Varghese JS et al., reported that the majority of female participants were in the age group of 18 to 39 years [3]. Previous studies have demonstrated that men are more likely to experience hypertension and are less aware of their condition compared to women [11, 14]. A study conducted by Geevar Z et al. reported that among young adults, the prevalence of hypertension was nearly three times higher in male participants compared to female participants [11]. In contrast, in the current study, the mean SBP and DBP were comparable between males and females.

Limitations

This study has several limitations, such as a small sample size, which could affect the applicability of the findings to a larger population. Additionally, being a real-world study, it may be subject to inherent variability and confounding factors that could influence the accuracy of the results. Moreover, further research is necessary to validate and expand upon the current findings.

CONCLUSION

The study highlights a significant prevalence of hypertension among pharmaceutical sales team members, with demographic factors such as age and region influencing blood pressure levels. While the overall mean SBP and DBP were within normal ranges, variations were noted, particularly among older participants. The findings underscore the need for targeted health interventions within this workforce to improve awareness and management of hypertension.

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Conflict of interest: Amit Gupta, Shweta Ghatge, and Sagar Patilare employees of USV Private Limited. All other authors have no conflict of interest to declare.

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