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Gender Differences in Knowledge, Attitude and Practice Regarding Hypertension Among the Educated Adults in Lucknow

A Cross-Sectional Study

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Abstract: In India as well as throughout the world, hypertension is a serious public health issue because of its asymptomatic nature and correlation with serious side effects like kidney and cardiovascular disorders. Although it is thought that education raises health consciousness, prevention is not always the result of knowledge. The purpose of this study is to evaluate and contrast gender-based variations in hypertension-related knowledge, attitude, and practice (KAP) among educated adults in Lucknow, Uttar Pradesh. Assessing and comparing the degree of knowledge, attitude, and practice (KAP) about hypertension among educated male and female adults was the main goal. Examining the relationship between demographic factors and KAP levels, spotting gender-specific trends, and comprehending the sources of health information and perceived obstacles to preventing hypertension were among the secondary goals. Using convenience sampling, a community-based cross-sectional study was carried out among 226 educated adults (>18 years old) in Lucknow's urban areas. In-person administration of a pre-tested, structured questionnaire was conducted using JotForm and paper format. Demographic details and KAP responses were compiled using descriptive statistics. The knowledge section's internal consistency was evaluated using Cronbach's alpha, and gender differences were compared using independent t-tests and chi-square tests. Data analysis was done using SPSS version 27. Higher income and postgraduate education were significantly linked to better knowledge ($p < 0.05$), with knowledge scores being moderate to good overall. In the domains of attitude and practice, gender differences were noted. Female respondents were more likely to place family health above their own well-being and to disagree with traditional caregiving roles. Both genders exhibited suboptimal behaviours, according to practice scores, especially when it came to blood pressure monitoring and involvement in hypertension awareness initiatives. Item-wise analysis was done because the attitude and practice sections showed poor internal reliability. The results emphasise the necessity of gender-sensitive health education initiatives that tackle behavioural and attitudinal obstacles in addition to knowledge gaps. There are still large gaps in awareness and preventive measures, even among adults with formal education. Including routine screenings and targeted messaging in community and workplace settings may improve efforts to control hypertension.

Keywords: *Hypertension, KAP Study, Gender Differences, Educated Adults, Public Health, Knowledge Attitude Practice, Blood Pressure Awareness, Lucknow.*

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I. INTRODUCTION

Hypertension is a significant public health concern globally and in India [1]. According to the World Health Organization (WHO) around 1.28 billion adults suffer from hypertension, two-third of them live in Low- and Middle-income countries [4]. Since Hypertension has no noticeable symptoms, it is often called “the silent killer”. But it causes serious health problems like stroke, cardiovascular diseases, kidney diseases, premature death etc. [2]. Urban populations are at a higher risk due to sedentary lifestyles, unhealthy diets, and chronic stress. The World Bank reports that 36.36% of India’s population was urban in 2023, with projections suggesting continued growth, increasing hypertension risk further [5].

World Bank in 2023 mentioned that 77% of Indian adults are literate [3]. Although educated adults have greater access to health information, this doesn’t guarantee them to have accurate knowledge or the adoption of healthy practices.

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Males and females may respond differently to the same health messages due to societal roles and personal priorities. In urban cities like Lucknow, rising rates of lifestyle-related conditions such as hypertension highlight the urgency of understanding how individuals perceive and respond to the condition particularly among different genders. By assessing gender-based KAP patterns, this research aims to uncover impactful differences in how men and women manage their hypertension risk. The findings support gender-sensitive interventions for an improve in public health messaging, and may be used as a guide for local program design in urban India.

Understanding the knowledge, attitude, and practices (KAP) of individuals regarding hypertension is crucial for developing effective prevention and control strategies. KAP studies can provide valuable insights into the factors influencing health behaviors related to hypertension management, such as lifestyle modifications. There are several studies on hypertension in the rural, healthcare workers and hypertensive groups but gender disparities in health outcomes for hypertension are less documented comparatively. Investigating gender differences in KAP concerning hypertension among specific populations like educated adults in urban settings is important for tailoring interventions. Urban populations, and particularly educated individuals, may have different exposures, access to information, and health behaviors compared to rural or less educated groups, and exploring how gender interacts with these factors in the context of hypertension KAP is essential. Therefore, this study aims to find out the differences in knowledge, attitudes, and practices regarding hypertension among the educated adult men and women in Lucknow, India, and to identify potential targets for gender-sensitive health education and intervention programmers.

II. LITERATURE REVIEW

Hypertension poses a significant burden in India [6]. A national cross-sectional study highlighted the widespread nature of hypertension across the country [7]. Studies have reported varying prevalence rates in different regions and populations within India [8]. For instance, a community-based study in urban Lucknow in 2019 found a certain prevalence rate and identified associated predictors [9]. Research among an affluent north Indian population in 2008 also explored prevalence and risk factors for pre-hypertension and hypertension [10].

Gender differences in hypertension: Multiple nationally representative samples have shown gender differences in the prevalence of hypertension across various age groups [5]. Analysis using the National Family Health Survey (NFHS) data has revealed **sex differences in the prevalence and risk factors of hypertension**, as well as in the **prevalence, awareness, treatment, and control rates** [11]. The **hypertension treatment cascade** (the proportion of individuals who are aware, treated, and controlled among all hypertensives) also shows variations between men and women, particularly in the reproductive age group [12]. While missed opportunities for treatment initiation and control among older adults in India have been reported, the differences in treatment cascade highlight potential gendered barriers at different stages [13].

Knowledge, attitude, and practice studies provide valuable insights into health behaviors [14]. Research has explored the KAP regarding antihypertensive medication use and lifestyle modifications among hypertensive patients [15]. These studies suggest that understanding patient knowledge and attitudes can inform interventions to improve practices related to managing hypertension.

Factors influencing hypertension and health behaviors extend beyond individual knowledge to include **socioeconomic and demographic variables [16]**. **Educational attainment** has been linked to health outcomes, including hypertension and type-2 diabetes [17]. While some studies on social determinants of hypertension have focused on high-income countries or specific disparities like rural-urban gaps in treatment and control among older adults, the concept of **educational health disparities** in cardiovascular disease risk factors is relevant [18]. Individuals with higher education may have different levels of health literacy and access to health information [19].

III. METHODOLOGY

A cross-sectional, observational study was conducted in urban and semi-urban regions of Lucknow, Uttar Pradesh, including Jankipuram Extension, Chinhat, and Indira Nagar. The study took place over a two-month period, from February 28 to May 05, 2025. The target population included educated adults aged 18 years and above residing in Lucknow. Participants were selected through convenience sampling, with the aim of ensuring a near-equal distribution of male and female respondents. Inclusion criteria were adults aged 18 years or above with at least higher secondary education, capable of understanding the study objectives and providing informed consent. Medical and paramedical professionals or students, individuals with psychiatric illness, and those unable to give consent were excluded to minimize potential bias.

Data were collected using a structured, self-administered questionnaire that was developed with reference to the WHO-STEPS survey framework and reviewed by experts for content validity. A pilot test was conducted with 20 participants to refine the questionnaire for clarity and appropriateness. The final version was recorder in-person mode using both digital (via JotForm) and paper formats, based on participant preference. The questionnaire comprised five sections: informed consent; demographic characteristics (age, gender, education, occupation, income, marital status, family history of hypertension, and hypertension status); knowledge about hypertension (7 questions broken into 12 items); attitudes toward hypertension and gender-related perceptions (7 questions); and practices related to hypertension prevention (7 questions). Data were collected over four weeks at educational institutions, public offices, residential neighborhoods, and public areas such as parks and restaurants.

Scoring for the knowledge section assigned one point for each correct response and zero for incorrect or "don’t know"

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answers. A composite knowledge score (range 0–12) was calculated and categorized into three levels: poor (0–4), moderate (5–8), and good (9–12), based on distribution and existing literature. Internal consistency of the knowledge domain was assessed using Cronbach's alpha. Due to low internal reliability ($\alpha < 0.3$), the attitude and practice sections were analyzed at the item level rather than as total scores.

These items were grouped and frequency distributions were reported to identify prevailing beliefs and behaviors. After collection, the data were exported from JotForm, cleaned in Microsoft Excel 2021, and imported into IBM SPSS Statistics version 27 for statistical analysis. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize participant characteristics and KAP responses. Inferential statistics included independent t-tests to compare mean knowledge scores between genders, and Chi-square tests to assess associations between KAP levels and demographic variables. Pearson's correlation analysis was used to examine associations among KAP domains. A significance level of $p < 0.05$ was considered statistically significant. Ethical considerations were strictly followed throughout the study. Written informed consent was obtained from all participants. Data were collected anonymously and confidentiality was maintained. Participation was entirely voluntary and participants could withdraw at any stage.

IV. RESULT

➢ *Socio-Demographic Characteristics*

Out of 226 educated adult individuals from Lucknow, 114 (50.4%) were male and 112 (49.6%) were female. A large proportion of respondents were aged between 18–25 years, with the majority having completed postgraduate education or higher. Nearly half (44.7%) were unmarried. While 26.5% reported a family history of hypertension, 40.3% had never been screened for the condition, and only 8% had received diagnosis by a physician.

➢ *Knowledge On Hypertension*

Knowledge level was assessed as poor (0-4), moderate (5-8) and good (9-12). Participants were classified based on total scores: 27.0% had poor knowledge, 42.5% moderate, and 30.5% good. Cronbach's alpha for the knowledge domain was acceptable ($\alpha = 0.735$), indicating reliable internal consistency. Chi-square tests showed significant associations between knowledge level and variables such as education [χ^2=15.531, df= 8, $p = 0.050$], occupation [$\chi^2 = 35.002$, df = 14, $p = 0.001$], income [$\chi^2 = 15.063$, df = 8, $p = 0.058$] and current status of hypertension level [$\chi^2 = 25.653$, df = 8, $p = 0.001$]. No significant association of knowledge level was found with gender, age, marital status and family history of hypertension.

➢ *Attitude Towards Hypertension*

Attitude items were assessed individually since the reliability score i.e. Cronbach's Alpha was low. Among the respondents, 38.1% reported being very worried about developing hypertension. A majority of 53.1% respondents believed that men and women need different prevention strategies for hypertension. Around 46% disagreed or strongly disagreed with the statement that BP check-ups are unnecessary without symptoms. A large majority of respondents 83.1% agreed that women prioritize their family's health over their own. A significant gender-based difference was observed in this belief ($\chi^2 = 15.48$, $p = 0.004$), with women more likely to strongly disagree than men. About 58.4% of respondents answered that both men and women tend to prioritize work over personal health equally.

➢ *Practice Towards Hypertension*

Health practice items towards hypertension were analyzed individually since the reliability score i.e. Cronbach's alpha was low. Only 24.8% reported checking their blood pressure monthly. Around 66.8% of respondents declared that they consume processed for at least once a week. Only 21.2% of respondents exercised five or more days a week. Over half of the respondents (50.4%) reported sleeping for around 7-8 hours every day. Among all the respondents, 84.1% abstained from smoking or consuming alcohol. However, 87.6% had never attended an awareness program or were not interested in attending one.

➢ *Sources And Barriers Of Hypertension*

Doctors/Healthcare workers were the most preferred reported source of hypertension information (86.7%), followed by family/friends (42.5%) and social media (21.2%). Only 6.2% reported never seeking hypertension-related information. Lack of awareness (65%), lack of time (43%), and cost (20%) were the most commonly reported barriers.

V. DISCUSSION

The present study assessed gender-based differences in knowledge, attitudes, and practices regarding hypertension among educated adults in Lucknow. The findings indicate that although a fair proportion of participants had moderate to good knowledge, gaps still exist in awareness of risk factors, symptoms, and complications. The acceptable internal consistency of the knowledge section ($\alpha = 0.735$) supports the reliability of the findings.

Significant associations between education, occupation, and knowledge level are consistent with findings from earlier KAP studies, indicating that individuals with higher educational backgrounds are more likely to be informed about non-communicable diseases. However, family history did not significantly influence knowledge level, possibly due to limited discussions on hereditary risks in routine healthcare interactions.

Attitudes revealed nuanced gender differences. Women were more critical of traditional caregiving roles, with a notable proportion expressing disagreement with the belief that women prioritize family health over their own. This reflects shifting perspectives among educated women and highlights the need for gender-sensitive public health messaging. The significant chi-square result ($p = 0.004$) supports these findings statistically.

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Health-related practices were generally favorable, especially regarding substance abstinence and moderate exercise. However, routine BP monitoring and participation in awareness programs remained low. The significant gender difference in substance use aligns with national data showing higher prevalence among men.

Finally, the study underscores the importance of doctors and healthcare workers as primary information sources. Limited engagement with digital platforms and public health campaigns indicates the need for more accessible and tailored interventions in urban areas.

VI. CONCLUSION

In this study, educated adult men and women in Lucknow had their knowledge, attitudes, and practices (KAP) about hypertension evaluated and compared. The results show that although most participants had moderate to good knowledge of hypertension, there are still significant gaps, especially in terms of awareness of symptoms, complications, and preventive measures related to lifestyle. Knowledge levels were substantially correlated with income, occupation, and educational attainment, underscoring the impact of socioeconomic factors on health literacy.

Significant variations in attitudes and behaviours were found by gender-based analysis. Despite acknowledging hypertension as a significant health issue, the male and female participants had different opinions about how to prevent it and how important it is to prioritise health. In certain areas, female respondents showed slightly more proactive health attitudes and were more critical of traditional caregiving expectations.

Both genders, however, showed limited practical adherence to preventive measures like frequent blood pressure checks, involvement in awareness campaigns, and healthy lifestyle choices. The attitude and practice scales' low internal consistency indicate that a variety of irregular factors may have had an impact on these domains. Consequently, in these sections, individual item-level analysis was more suitable than group scoring.

This study's conclusion highlights the necessity of focused, gender-sensitive public health initiatives. More approachable, interesting, and contextual health education is necessary because educated adults may possess rudimentary knowledge but lack consistent healthy behaviours. In urban India, efforts to prevent hypertension could be strengthened by bolstering community-level programs and adjusting communication according to gender-specific needs.

VII. LIMITATIONS OF THE STUDY

Despite providing insightful information about gender-based variations in the knowledge, attitude, and practice (KAP) of hypertension among educated adults in Lucknow, this study had a number of drawbacks. First off, convenience sampling may have resulted in selection bias and restricted the findings' applicability to a larger population. Second, self-reported responses were the only method used for data collection. These responses are vulnerable to social desirability bias and recall bias, particularly in the attitude and practice sections where participants might have over-reported healthy behaviours. The study's cross-sectional design limits its capacity to demonstrate causal links between demographic traits and KAP outcomes, as it only offers a moment in time.

The results' variability and applicability may have been impacted by the study sample's limited representation of specific subgroups, including elderly participants, homemakers, and those with PhD and above education. The attitude and practice sections' low internal consistency, as shown by their low Cronbach's alpha values, was another significant drawback that made item-wise interpretation necessary and prohibited the use of total scoring. The KAP levels of rural or marginalised groups, who face different challenges in managing and raising awareness of hypertension, may also not be reflected in the study because it was limited to an urban population with comparatively higher educational attainment. Last but not least, time and resource limitations restricted the study's sample size and scope and prevented the addition of qualitative elements that would have deepened the conclusions.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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