International Journal of Community Medicine and Public Health
Nadar SN et al. Int J Community Med Public Health. 2026 Apr;13(4):1972-1977
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20261041

Original Research Article

A comparative cross-sectional study on the prevalence of spousal concordance of hypertension and diabetes among the inhabitants of urban and rural field practice areas

Shimona N. Nadar, Rekha Udgiri*

Department of Community Medicine, BLDE (DU), Shri B.M. Patil Medical College Hospital and Research Centre, Vijayapura, Karnataka, India

Received: 05 February 2026
Revised: 23 March 2026
Accepted: 26 March 2026

***Correspondence:**
Dr. Rekha Udgiri,
E-mail: dr.shimonan@gmail.com

ABSTRACT

Background: The burden of non-communicable diseases, particularly diabetes and hypertension, is increasing globally, affecting nearly 1.8 billion people. In India, around 77 million individuals have diabetes, and nearly 30% of adults are hypertensive. "Couple concordance" refers to the presence of the same disease in both partners. As couples often share similar lifestyles, studying concordance helps in understanding shared risk factors. Objectives were to assess the prevalence of couple concordance for hypertension and diabetes and to identify associated factors.
Methods: A cross-sectional study was conducted among 316 married couples in rural and urban field practice areas of a tertiary care centre from May to June 2025. Couples with both partners aged ≥40 years were included. Data were collected using a semi-structured questionnaire through interviews, employing systematic random sampling. Analysis was performed using SPSS version 26.0.
Results: The prevalence of couple concordance was 10.8% for diabetes and 13% for hypertension, while 8.6% of couples had both conditions. Higher concordance was significantly associated with lower socioeconomic status and lower educational levels.
Conclusions: A notable prevalence of spousal concordance for diabetes and hypertension was observed, especially among disadvantaged groups. These findings emphasize the need for couple-based preventive strategies, including lifestyle modification, health education, and early screening, to reduce the shared burden of NCDs.

Keywords: Diabetes mellitus, Hypertension, NCD, Spousal concordance

INTRODUCTION

Non-communicable diseases (NCDs) such as hypertension and diabetes mellitus have emerged as major public health challenges worldwide, contributing significantly to morbidity, mortality, and healthcare expenditure. The global burden of NCDs continues to rise, with diabetes affecting an estimated 537 million adults in 2021, a number projected to increase to 643 million by 2030, while hypertension affects over 1.28 billion adults globally, with two-thirds residing in low- and middle-income countries (LMICs).[1,2] In India, the epidemiological transition has resulted in a similar trend, with approximately 77 million individuals living with diabetes and nearly 30% of adults affected by hypertension, placing a substantial strain on health systems.[3]

Spousal concordance, defined as the presence of the same disease condition- such as hypertension or diabetes- in both members of a married couple. Spouses often share environmental exposures, dietary habits, lifestyle patterns, psychosocial stressors, and socioeconomic conditions, all of which contribute to shared health

risks.[4,5] Evidence suggests that couples tend to influence each other's behaviours, including physical activity, smoking, alcohol use, and treatment adherence, making them an important unit for understanding risk factors and designing targeted interventions.[6]

Several international studies have reported significant spousal concordance for cardiometabolic conditions and highlighted the role of shared lifestyle factors and household environments.[7] However, in India, limited research has examined the extent of concordance for hypertension and diabetes among married couples, particularly across urban and rural settings, where socio-demographic and behavioural determinants differ substantially. Understanding spousal concordance in these populations can provide insights into clustering of NCD risk within households and inform couple-based preventive and health promotion strategies.

In this context, the present study aimed to assess the prevalence of spousal concordance of hypertension and diabetes among married couples aged 40 years and above residing in the urban and rural field practice areas of a tertiary care institution and to identify the factors associated with concordance. This evidence will be valuable for strengthening community-based NCD screening and lifestyle modification programs that target couples as a unit for intervention.

METHODS

Study design and setting

A cross-sectional study was conducted in the urban field practice area of a tertiary care centre in Vijayapura, Karnataka. The study was carried out over a period of two months, from May to June 2025, among married couples residing in the urban field practice area.

Study population

The study population comprised married couples in which both partners were aged ≥35 years. Couples who were permanent residents of the study area and who provided informed consent were included. Couples were excluded if either spouse was critically ill, unwilling to participate, or unavailable at the time of the visit.

Sample size and sampling technique

A total of 316 married couples were included in the study. The sample was selected using a systematic random sampling technique after preparing a line list of individuals diagnosed with diabetes mellitus (DM) or hypertension (HTN), with assistance from ASHA workers. Based on the total number of eligible couples in the area, the sampling interval was calculated to be 12, and every 12th eligible couple was selected until the required sample size was achieved.

Data collection tools and procedure

Data collection was carried out after obtaining written informed consent from all participants. A semi-structured, interviewer-administered questionnaire was used to obtain information on socio-demographic characteristics, lifestyle practices, medical history, and known diagnoses of hypertension and diabetes.

Where available, information was cross-verified using medical records, medication history, and recent blood pressure or blood glucose reports. The questionnaire also included shared lifestyle factors such as dietary patterns, tobacco and alcohol use, physical activity, and family history of NCDs.

Operational definitions

Spousal concordance

Defined as both husband and wife having a confirmed diagnosis of hypertension, diabetes, or both, based on self-report corroborated with medical records or current medication use.

Hypertension

Physician-diagnosed hypertension or current use of antihypertensive medication.

Diabetes mellitus

Physician-diagnosed diabetes or current use of antidiabetic medication.

Ethical considerations

Ethical approval for the study was obtained from the institutional ethics committee of the tertiary care centre. Participation was voluntary, and confidentiality and anonymity of all study participants were ensured. Written informed consent was obtained from every couple before enrolment.

Data management and statistical analysis

Data were entered into Microsoft Excel and subsequently analysed using SPSS version 26.0. Descriptive statistics-frequencies, percentages, means, and standard deviations-were used to summarize the data. The prevalence of spousal concordance was estimated separately for diabetes, hypertension, and combined conditions.

To identify factors associated with concordance, inferential statistics, including the Chi-square test, were applied to assess relationships between spousal concordance and socio-demographic variables such as education, socioeconomic status, and occupation. A p value <0.05 was considered statistically significant.

RESULTS

Table 1 indicates that the majority of individuals belonged to the 35-45 years age group (44.3%), followed by those aged 46-55 years (31.1%), while a smaller proportion were in the 56-65 years age group (20.6%), indicating that most couples were middle-aged, a period during which lifestyle-related non-communicable diseases such as diabetes mellitus (DM) and hypertension (HTN) commonly begin to manifest, making this population particularly relevant for studying spousal concordance. With respect to educational status, a considerable proportion of participants had low to moderate levels of education, with 20.7% being illiterate, 26.4% having completed primary schooling, and 22.2% having attained high school education, while higher educational attainment was relatively less common, with 16% having pre-university education and 14.7% being graduates.

Table 1: Socio-demographic profile of the participants (n=632).

Variables	N	%
Age in years		
35-45	280	44.3
46-55	222	31.1
56-65	130	20.6
Education		
Illiterate	131	20.7
Primary school	167	26.4
High school	140	22.2
Pre-University	101	16
Graduate	93	14.7

Table 2: Multivariate logistic regression for association of risk factors with spousal concordance.

Variable	Spousal concordant (102 couples)	Spousal discordant (214 couples)	aOR (95% CI)	P value
Physical activity				
Active	30	120	0.41 (0.24-0.72)	0.005*
Inactive	72	94	ref	
Tobacco use				
Yes	60	80	2.14 (1.34-3.42)	0.001*
No	42	134	ref	
Alcohol use				
Yes	62	75	1.89 (1.18-3.04)	0.007*
No	40	139	ref	
BMI				
Underweight	10	20	1.10 (0.45-2.70)	0.01*
Normal	32	150	ref	
Obese	60	44	2.30 (1.15-4.58)	
Years of marriage (years)				
5-15	10	90	ref	0.005*
16-25	45	24	2.10 (1.00-4.35)	
26-35	25	30	1.70 (0.65-4.35)	
36-45	22	60	1.00 (0.4-2.55)	
Socio-economic status				
Upper class	7	22	ref	0.002*
Upper middle class	10	38	1.2 (0.55-2.55)	
Middle class	33	50	1.4 (0.70-2.90)	
Lower middle class	30	63	1.7 (0.55-4.25)	
Lower class	22	41	1.7 (0.62-3.65)	

*Statistically significant.

The Figure 1 depicts that for hypertension, a higher proportion of cases was observed among husbands alone (13%) compared to wives alone (10.4%), while concordant hypertension among both spouses accounted for 10.8%; similarly, for diabetes mellitus, husbands alone constituted the largest proportion (15.8%), followed by concordant diabetes among both spouses (13%) and wives alone (11.1%). Regarding the coexistence of both diabetes and hypertension, husbands alone were most affected (11.4%), while the concordant presence of both conditions was seen in 8.5% of couples, and wives alone showed the lowest proportion (6%). Table 2 shows that physical activity had a significant protective association with spousal concordance, as couples who were physically active had significantly lower odds of being concordant for NCDs compared to inactive couples (aOR=0.41; 95% CI: 0.24-0.72; p=0.005). In contrast, tobacco use was strongly associated with spousal

concordance, with couples reporting tobacco use having more than twice the odds of concordant NCDs compared to non-users (aOR=2.14; 95% CI: 1.34-3.42; p=0.001), and alcohol use was also significantly associated, as couples who consumed alcohol had higher odds of concordance than non-users (aOR=1.89; 95% CI: 1.18-3.04; p=0.007). With respect to BMI, obesity emerged as a significant determinant, with obese couples having more than twice the odds of concordant NCDs compared to those with normal BMI (aOR=2.30; 95% CI: 1.15-4.58; p=0.01). Years of marriage showed a significant overall association (p=0.005), with couples married for 16-25 years having significantly higher odds of concordance compared to those married for 5-15 years (aOR=2.10; 95% CI: 1.00-4.35), and socio-economic status was also significantly associated with spousal concordance (p=0.002), with a trend towards higher odds of concordance among middle and lower socio-economic groups compared to the upper class.

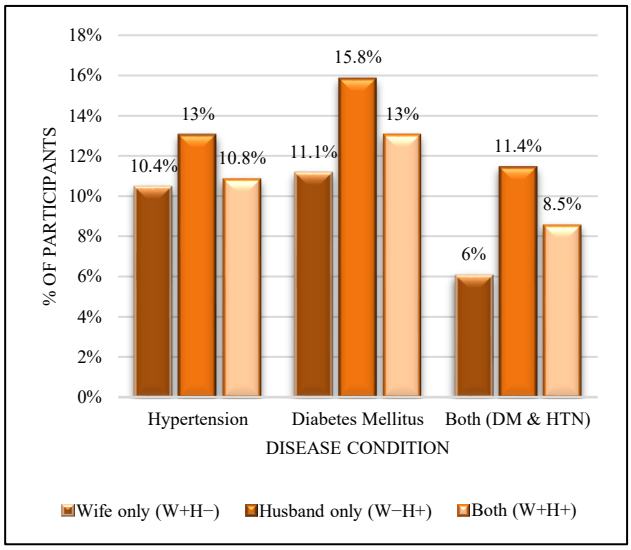

Figure 1: Distribution of disease condition according to spousal status.

DISCUSSION

The present study demonstrates a measurable proportion of spousal concordance of hypertension and diabetes mellitus among urban couples in Vijayapura, highlighting the tendency of non-communicable diseases (NCDs) to cluster within marital relationships. This finding is comparable to evidence from both Indian and international studies, which consistently report that a substantial proportion of couples are concordant for cardiometabolic conditions.

In India, a large population-based analysis by Varghese et al, reported that 19.8% of couples had concordant hypertension, which closely parallels the concordant hypertension observed in the present study.[9] Similarly, Nayak et al, using pooled NFHS-5 and LASI datasets comprising over 63,000 Indian couples, found that the odds of hypertension were 1.84 times higher in wives with hypertensive husbands as compared to wives with normotensive husbands.[8]

In the present study, the majority of couples belonged to the 35-55-year age group. This indicates that most couples were middle-aged, a period during which lifestyle-related non-communicable diseases such as DM and HTN commonly begin to manifest, making this population particularly relevant for studying spousal concordance of these conditions. This age distribution is comparable a study done by Nayak et al, which analysed Indian couples aged ≥15 years but reported higher concordance of hypertension among middle-aged adults compared to younger couples, suggesting that cumulative exposure to shared risk factors increases with age.[8] Similarly, Varghese et al, using LASI data, focused largely on middle-aged and older couples (≥45 years) and reported a concordant hypertension prevalence of 19.8% in India, reinforcing the relevance of age as a key sociodemographic determinant.[9]

The educational profile of participants in the present study showed that a large proportion had low to moderate levels of education, with relatively fewer graduates. This educational profile suggests that a large segment of the study population may have limited health literacy, which could influence shared lifestyle practices, health-seeking behaviour, and disease awareness within couples, thereby contributing to concordance of DM and HTN. Nayak et al, observed that couples with lower education demonstrated significant spousal concordance.[8] Patel et al, similarly reported strong concordance of hypertension and diabetes among Indian households with lower educational status.[10]

The multivariate logistic regression analysis in the present study further strengthens the evidence for shared behavioural and socio-demographic determinants underlying spousal concordance of hypertension and diabetes. After adjustment, physical activity emerged as a significant protective factor, with physically active couples having lower odds of concordant NCDs. This finding is consistent with evidence from a study done by Jun et al, which reported that concordance of low physical activity significantly increased the likelihood of shared hypertension and obesity among couples, even after controlling for age and other covariates.[14] Similar protective effects of shared physical activity have also been observed in household-level analyses in the study done by Qin et al, where adjustment for behavioural factors attenuated but did not eliminate spousal associations for hypertension and diabetes.[12]

Socio-economic status in the present study showed a significant association with spousal concordance, with higher odds observed among middle and lower socio-economic groups. This finding is in agreement with Indian household-level evidence reported by Patel et al, who demonstrated that adults residing in households with

chronic diseases were more likely to be affected themselves, particularly in socio-economically vulnerable groups.[10] In contrast, studies from high-income countries such as the United States and England by Varghese et al, reported that higher socio-economic position was more strongly associated with concordance.[9] These contrasts underscore the importance of local socioeconomic contexts when interpreting spousal concordance patterns.

Duration of marriage in the present study was also significantly associated with concordance, with higher odds observed among couples married for longer durations. This finding suggests that longer shared exposure to common environments and behaviors may increase the likelihood of concordant NCDs, although this trend was less consistent in longer durations. Similar trends have been reported in studies by Watanabe et al, and Qin et al, where longer marital duration and prolonged cohabitation were associated with greater alignment of lifestyle behaviours and higher disease concordance.[11,12] This supports the hypothesis that cumulative shared exposure over time plays a crucial role in the development of concordant hypertension and diabetes.

Tobacco use and alcohol consumption showed strong positive associations with spousal concordance in the present study, with adjusted odds exceeding twofold for tobacco use. Comparable findings have been reported in Indian and international studies. Nayak et al, demonstrated that spousal concordance of hypertension in India remained significant even after adjusting for tobacco use, alcohol consumption, BMI, education, and wealth, with adjusted odds ratios only marginally attenuated from unadjusted estimates, indicating persistent within-couple clustering beyond measured risk factors.[9] Similarly, Qin et al, reported that adjustment for smoking and drinking reduced but did not invalidate the association between a household member's chronic disease status and that of other members, including spouses, for both hypertension and diabetes.[12]

Obesity emerged as a significant determinant of concordant NCDs in the present study, with obese couples showing more than twice the odds of concordance compared to those with normal BMI. This magnitude is comparable to findings from Indian household research by Patel et al, where adjusted odds ratios for concordance of obesity, hypertension, and diabetes among spouses ranged from approximately 1.5 to over 2.0, even after controlling for age, education, and marital status.[13] Similar associations have been reported in Japanese studies, where Watanabe et al found significantly elevated adjusted odds of wives having hypertension or diabetes when husbands were affected, independent of socio-demographic factors.[11]

These results underscore the need to move beyond individual-centric models of NCD prevention and management and to incorporate couple- and household-based approaches into urban public health strategies, particularly for early screening, risk reduction, and behaviour modification among high-risk couples.

Although efforts were made to verify diagnoses, reliance on self-reported history and available medical records may have led to misclassification or underdiagnosis, particularly among asymptomatic individuals. Furthermore, the study did not assess the directionality of influence between spouses or account for the duration and intensity of shared exposures.

CONCLUSION

The study demonstrated a significant prevalence of spousal concordance of hypertension and diabetes, highlighting the clustering of non-communicable diseases within couples. The association of concordance with modifiable factors such as physical inactivity, tobacco and alcohol use, and obesity underscores the role of shared lifestyle behaviors. Furthermore, the influence of socio-economic and educational status emphasizes the need for targeted public health interventions. These findings support the implementation of couple-based screening, health education, and lifestyle modification strategies as an effective approach to reduce the growing burden of NCDs at the household level.

ACKNOWLEDGEMENTS

The authors acknowledge all the study participants for their cooperation. Authors also thank the field staff and interns for their assistance in data collection.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee of Shri. BM Patil Medical College and Research Centre, Vijayapura, Karnataka. BLDE (DU)/IEC/1156/2024-25

REFERENCES

1. World Health Organization. Hypertension. Available at: https://www.who.int/health-topics/hypertension#tab=tab_1. Accessed on 14 December 2025.
2. World Health Organization. Diabetes. Available at: https://www.who.int/health-topics/diabetes#tab=tab_1. Accessed on 14 December 2025.
3. International Diabetes Federation. IDF Diabetes Atlas. 10th ed. Brussels: International Diabetes Federation; 2021.
4. Meyler D, Stimpson JP, Peek MK. Health concordance within couples: a systematic review. Soc Sci Med. 2007;64(11):2297-310.
5. Di Castelnuovo A, Quacquaruccio G, Donati MB, de Gaetano G, Iacoviello L. Spousal concordance for major cardiovascular risk factors: a systematic

review and meta-analysis. Am J Epidemiol. 2009;169(1):1-8.
6. Jackson SE, Steptoe A, Wardle J. The influence of partner's behavior on health behavior change: the English longitudinal study of ageing. JAMA Intern Med. 2015;175(3):385-92.
7. Wang Z, Ji W, Song Y, Li J, Shen Y, Zheng H, et al. Spousal concordance for hypertension: A meta-analysis of observational studies. J Clin Hypertens (Greenwich). 2017;19(11):1088-95.
8. Varghese JS, Lu P, Choi D, Kobayashi LC, Ali MK, Patel SA, et al. Spousal concordance of hypertension among middle-aged and older heterosexual couples around the world: evidence from studies of aging in the United States, England, China, and India. J Am Heart Assoc. 2023;12:e030765.
9. Nayak G, Ghosal S, Ghosal J, Dutta A. What causes concordance of hypertension between spouses in India? Identifying a critical knowledge gap from a nationally representative cross-sectional sample of 63,020 couples aged ≥15 years. BMC Public Health. 2023;23:1434.
10. Khan A, Lasker SS, Chowdhury TA. Are spouses of patients with type 2 diabetes at increased risk of developing diabetes? Diabetes Care. 2003;26(3):710-2.
11. Watanabe T, Sugiyama T, Takahashi H, Noguchi H, Tamiya N. Concordance of hypertension, diabetes and dyslipidaemia in married couples: a cross-sectional study using nationwide survey data in Japan. BMJ Open. 2020;10:e036281.
12. Qin Y, Guo Y, Tang Y, Wu C, Zhang X, He Q, et al. Concordance of chronic conditions among household members in Shanghai: a cross-sectional study. BMJ Open. 2019;9:e031240.
13. Patel SA, Dhillon PK, Kondal D, Jeemon P, Kahol K, Manimunda SP, et al. Chronic disease concordance within Indian households: a cross-sectional study. PLoS Med. 2017;14(9):e1002395.
14. Jun SY, Kang M, Kang SY, Lee JA, Kim YS. Spousal concordance regarding lifestyle factors and chronic diseases among couples visiting primary care providers in Korea. Korean J Fam Med. 2020;41(3):183-8.

Cite this article as: Nadar SN, Udgiri R. A comparative cross-sectional study on the prevalence of spousal concordance of hypertension and diabetes among the inhabitants of urban and rural field practice areas. Int J Community Med Public Health 2026;13:1972-7.