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AWARENESS AND USE OF TRADITIONAL HOME FOOD REMEDIES AND HERBS IN MANAGING DIABETES AND HYPERTENSION

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Abstract

Introduction – Diabetes mellitus and hypertension are major non-communicable diseases contributing significantly to India's chronic disease burden. Individuals frequently use traditional home food remedies and herbs alongside conventional treatment, often guided by informal knowledge.

Aim – To assess the awareness and use of traditional home food remedies and herbs in the management of diabetes mellitus and hypertension.

Methodology – A descriptive cross-sectional study was conducted among 100 adults aged 40–65 years in Mumbai using purposive sampling. Ethical approval was obtained from ISBEC, and informed consent was taken from all participants. Data were collected using a self-structured, pre-tested questionnaire for demographic information, anthropometric measurements, clinical history, knowledge, attitude and practice (KAP), a food frequency questionnaire (FFQ) for traditional remedies, and a three-day 24-hour dietary recall. Statistical analysis was performed using SPSS with Mann–Whitney U, Kruskal–Wallis, Chi-square, and Spearman's correlation; $p < 0.05$ was considered significant.

Results – Median age was 53.5 years (IQR: 46.0–59.0); 42.0% had diabetes only, 40.0% hypertension only, and 18.0% both. Awareness was nearly universal (99.0%); amla, jamun, fenugreek, Black cumin, turmeric, and garlic were the most commonly identified remedies. Knowledge differed significantly across disease categories ($\chi^2 = 13.6$, $p = 0.001$). KAP scores were strongly associated with home preparation, frequency of use, and perceived improvements in clinical and well-being outcomes ($p < 0.001$). Higher knowledge and attitudes were associated with disclosure to providers ($p = 0.013$) and information verification ($p = 0.024$); knowledge–attitude correlation was moderate ($\rho = 0.446$, $p < 0.001$).

Conclusion – Although awareness and use of traditional home food remedies are widespread, gaps remain in safety practices and disclosure to healthcare providers, highlighting the need for evidence-informed patient education and culturally sensitive integration of these practices into chronic disease management.

Keywords – Diabetes Mellitus, Hypertension, Traditional Home Remedies, Herbs, Knowledge, Attitudes, Practices

Introduction

Diabetes mellitus and hypertension are among the most prevalent chronic non-communicable diseases globally, contributing substantially to morbidity and mortality, particularly in low- and middle-income countries such as India. Type 2 diabetes mellitus is characterized by persistent hyperglycaemia due to impaired insulin secretion or action, while hypertension involves chronically elevated blood pressure, increasing the risk of cardiovascular, renal, and cerebrovascular complications. India bears a significant burden of both conditions, with rising prevalence in urban populations due to lifestyle and dietary transitions (Anjana et al., 2023; World Health Organization, 2021).

Alongside pharmacological treatment and lifestyle modification, individuals frequently incorporate traditional home food remedies and herbs into their daily routines. Commonly used ingredients such as turmeric, fenugreek, garlic, amla, jamun, cinnamon, ginger, and tulsi are deeply rooted in cultural practices and are widely perceived as natural, accessible, and beneficial (Gogtay et al., 2018; Ahmed et al., 2019). Evidence suggests that several of these herbs may contribute to improved glycaemic control and blood pressure regulation through mechanisms such as enhanced insulin sensitivity, antioxidant activity, and vascular function, although effects vary depending on preparation and dosage (Shirzad et al., 2021; Ulkomah et al., 2024).

Despite their widespread use, these remedies are often adopted based on informal sources such as family traditions and community knowledge rather than professional guidance. This raises concerns regarding variability in preparation methods, lack of standardization, potential herb–drug interactions, and limited disclosure to healthcare providers (Kifle et al., 2021; Hikaambo et al., 2022). Previous studies have also highlighted that individuals with chronic diseases frequently use herbal remedies alongside prescribed medications without adequate supervision, which may influence treatment outcomes and safety (Tadesse et al., 2022; Amaeze et al., 2018).

Knowledge, attitudes, and practices (KAP) play a critical role in shaping the use of traditional remedies. Factors such as disease burden, cultural beliefs, accessibility, and perceived effectiveness influence these behaviours. However, integrated evidence examining awareness, usage patterns, and safety practices in urban Indian populations remains limited. Therefore, the present study aims to assess the awareness and use of traditional home food remedies and herbs among adults managing diabetes mellitus and hypertension, with a focus on knowledge, attitudes, practices, perceived effectiveness, and safety behaviours.

Aim: To assess the awareness and use of traditional home food remedies and herbs for managing diabetes mellitus and hypertension

Material and Methodology

A descriptive cross-sectional study was conducted among 100 adults aged 40–65 years in Mumbai diagnosed with diabetes mellitus and/or hypertension using purposive sampling. Inclusion criteria included confirmed diagnosis, ability to communicate in English, Hindi, or Marathi, and willingness to provide informed consent. Individuals with severe comorbidities, recent major surgery, pregnancy, or inability to participate were excluded. Ethical approval was obtained, ensuring confidentiality and voluntary participation. Data were collected through face-to-face interviews using a structured, pre-tested questionnaire developed from literature review and expert validation. The tool included sections on demographics, anthropometric measurements (height, weight, BMI), clinical history, and a Knowledge, Attitude, and Practice (KAP) assessment focusing on awareness, beliefs, usage patterns, safety perceptions, and disclosure behaviours. A semi-structured food frequency questionnaire assessed habitual intake of traditional remedies, and a 3-day 24-hour dietary recall estimated nutrient intake. Knowledge and attitude composite scores were computed and categorised into tertiles. Data were coded and analysed using SPSS. Categorical variables were expressed as frequencies and percentages, and continuous variables as median (IQR) or mean ± SD. Statistical tests included Mann–Whitney U, Kruskal–Wallis, Chi-square, and Spearman's correlation. A p-value < 0.05 was considered statistically significant.

Results

A total of 100 adults aged 40–65 years participated in the study. The findings include socio-demographic and anthropometric characteristics, the distribution of current health problems, knowledge composite scores stratified by demographic and clinical variables, and the relationships between knowledge, attitudes, practices, perceived effectiveness, and safety behaviours related to the use of traditional home food remedies and herbs.

Table No. 1 : Basic Socio-demographic and Anthropometric Characteristics of the Study Participants (N = 100)

Basic Characteristics	Category	n (%) / Median (IQR)
Age (years)	40 to 65 years	53.5 (46.0–59.0)
Gender	Male	61 (61.0)
	Female	39 (39.0)
Marital status	Single	8 (8.0)
	Married	82 (82.0)
	Widowed	6 (6.0)
	Divorced	4 (4.0)
Education level	No formal education	2 (2.0)
	Primary education	4 (4.0)
	Secondary education	20 (20.0)

	Graduate	56 (56.0)
	Post-graduate	18 (18.0)
Type of family	Joint	54 (54.0)
	Nuclear	45 (45.0)
	Living alone	1 (1.0)
Dietary preference	Vegetarian (milk, no eggs)	61 (61.0)
	Vegetarian (eggs, no milk)	6 (6.0)
	Vegetarian (milk + eggs)	12 (12.0)
	Vegan	7 (7.0)
	Non-vegetarian	14 (14.0)
Socioeconomic status (Kuppuswamy scale)	Lower middle	7 (7.0)
	Upper middle	72 (72.0)
	Upper	21 (21.0)
Anthropometric Measurements		
Height (cm)	–	163.4 (158.5–167.2)
Weight (kg)	–	70.7 (62.1–80.1)
BMI (kg/m²)	–	25.9 (24.0–29.9)
BMI categories	Normal weight	20 (20.0)
	Overweight	17 (17.0)
	Obese	63 (63.0)

Note. Continuous variables are presented as Median (Interquartile Range, IQR); categorical variables are presented as n (%). N = 100.

Table No. 1 presents the basic socio-demographic and anthropometric profile of the study participants. The cohort comprised 100 adults aged 40–65 years, with a median age of 53.5 years (IQR: 46.0–59.0), reflecting a middle-aged population consistent with the typical age range for the onset and management of diabetes and hypertension. The majority were male (61.0%) and married (82.0%). The cohort was relatively well-educated, with 56.0% being graduates and 18.0% post-graduates. More than half lived in joint families (54.0%), and dietary practices were predominantly vegetarian: 61.0% reported a lacto-vegetarian dietary pattern, while only 14.0% were non-vegetarian. The majority of participants (72.0%) belonged to the upper-middle socioeconomic class as per the Kuppuswamy scale. Anthropometrically, the median BMI was 25.9 kg/m² (IQR: 24.0–29.9), with 63.0% classified as obese and 17.0% as overweight, indicating a high burden

of excess body weight that is clinically relevant given the elevated cardiometabolic risk associated with central adiposity in Asian Indian populations.

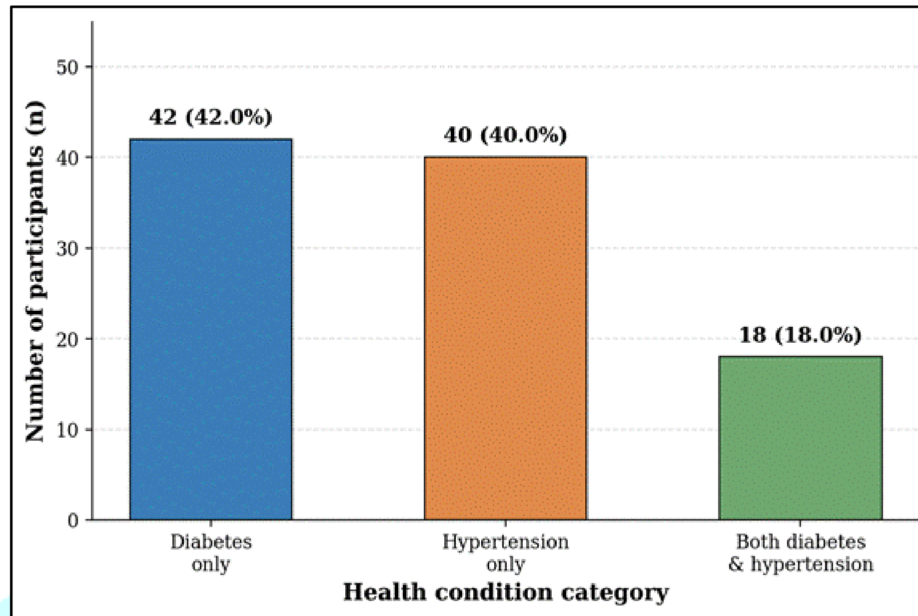

Figure No. 1 : Distribution of Current Health Problems Among Study Participants (N = 100)

Figure No. 1 illustrates the distribution of current health problems among the 100 study participants. Of the total cohort, 42 participants (42.0%) reported a diagnosis of diabetes only, 40 participants (40.0%) reported hypertension only, and 18 participants (18.0%) reported having both diabetes and hypertension concurrently. While diabetes was the single most commonly reported condition, hypertension was nearly equally prevalent, and a clinically important subset of participants presented with both conditions, indicating a substantial burden of cardiometabolic comorbidity in the study population. This co-existence is particularly relevant for interpreting subsequent findings, as participants managing both conditions are likely to navigate more complex self-care decisions and have greater exposure to health information.

Table No. 2 : Knowledge Composite Score by Demographic and Clinical Characteristics of the Study Participants (N = 100)

Demographic / clinical characteristic	Category	Knowledge score Median (IQR)	Test value	p value
Age (years)	Poor knowledge (0–13)	56.0 (48.8–59.3)	5.63‡	0.060
	Average knowledge (14–16)	48.0 (45.0–55.0)		
	Good knowledge (≥ 17)	55.0 (47.8–61.3)		
Gender	Male	15.0 (12.0–18.0)	1030†	0.258
	Female	16.0 (13.0–19.0)		
Education level	No formal education	18.0 (15.5–20.5)		
	Primary education	21.5 (18.5–22.3)		

	Secondary education	16.5 (14.0–19.0)	4.29‡	0.369
	Graduate	15.0 (12.0–18.0)		
	Post-graduate	16.0 (14.3–17.5)		
Socioeconomic status (Kuppuswamy scale)	Lower middle	16.0 (15.0–17.5)	0.672‡	0.715
	Upper middle	16.0 (13.0–18.0)		
	Upper	15.0 (12.0–18.0)		
Diabetes or hypertension	Diabetes only	14.5 (13.0–16.0)	13.6‡	0.001**
	Hypertension only	16.0 (11.8–18.0)		
	Both	19.0 (15.5–23.8)		
BMI categories	Normal weight	15.0 (11.8–18.0)	1.83‡	0.400
	Overweight	17.0 (14.0–19.0)		
	Obese	16.0 (13.0–18.0)		

Note. Values are reported as Median (Interquartile Range, IQR; 25th–75th percentile). † Mann–Whitney U test (2 groups); ‡ Kruskal–Wallis test (≥ 3 groups). * $p < 0.05$; ** $p < 0.005$.

Table No. 2 demonstrates that knowledge composite scores were broadly similar across most demographic strata, with no statistically significant differences observed by age ($p = 0.060$), gender ($p = 0.258$), education level ($p = 0.369$), socioeconomic status ($p = 0.715$), or BMI categories ($p = 0.400$). However, a statistically significant difference was observed across disease categories ($\chi^2 = 13.6$, $p = 0.001$), with participants managing both diabetes and hypertension demonstrating notably higher median knowledge scores [19.0 (15.5–23.8)] compared with those with only diabetes [14.5 (13.0–16.0)] or only hypertension [16.0 (11.8–18.0)]. This finding suggests that exposure to a more complex disease burden may motivate individuals to actively explore and engage with traditional remedies as additional self-care options. The relative uniformity of knowledge scores across socioeconomic strata further indicates that awareness of home remedies and herbs is broadly culturally embedded rather than driven primarily by educational or financial factors.

Table No. 3 : Knowledge, Attitudes, and Practices Related to Home Food Remedies and Herbs in Study Participants (N = 100)

Practice indicator	Category	Knowledge score Median (IQR)	Attitude score Median (IQR)	Knowledge test & p	Attitude test & p
Preparation of remedies	Home-prepared	17.0 (15.0–18.8)	21.0 (19.0–21.0)	χ^2 = 13.9‡ p < 0.001**	χ^2 = 13.3‡ p = 0.001**
	Ready-made	8.0 (7.0–14.0)	19.0 (16.0–19.0)		
	Both	15.0 (11.0–18.0)	19.0 (17.0–20.0)		
Frequency of usage of any home remedies or herbs	Never / Rarely	9.0 (8.0–10.0)	17.5 (16.8–18.3)	χ^2 = 26.5‡ p < 0.001**	χ^2 = 16.5‡ p = 0.002**
	Occasionally	11.0 (8.0–15.0)	18.0 (16.0–19.0)		
	Weekly	16.0 (14.0–16.3)	20.0 (19.0–21.0)		
	2–3 times per week	16.0 (12.0–18.0)	18.0 (17.0–21.0)		
	Daily	21.5 (16.3–23.8)	21.0 (20.0–21.0)		
Combining home remedies / herbs with prescribed medicines	No	15.0 (11.3–18.0)	19.0 (17.0–21.0)	χ^2 = 1.42‡ p = 0.234	χ^2 = 10.18‡ p = 0.001**
	Yes	16.0 (14.0–18.0)	21.0 (19.0–21.0)		
Stopped / reduced prescribed medications	No	16.0 (13.0–18.0)	19.0 (18.0–21.0)	χ^2 = 0.0499‡ p = 0.823	χ^2 = 0.0396‡ p = 0.842
	Yes	17.5 (10.5–20.0)	19.5 (17.8–21.0)		

Note. Values are reported as Median (Interquartile Range, IQR; 25th–75th percentile). ‡ Kruskal–Wallis test (≥ 3 groups). * p < 0.05; ** p < 0.005.

Table No. 3 indicates significant associations between knowledge, attitudes, and multiple practice-related variables. Participants who prepared remedies at home demonstrated significantly higher median knowledge scores [17.0 (15.0–18.8)] compared with those using ready-made forms [8.0 (7.0–14.0)] (χ^2 = 13.9, $p < 0.001$), along with more favourable attitudes ($p = 0.001$), suggesting that direct involvement in preparing remedies is associated with deeper engagement with the practice. A strong relationship was also observed with frequency of use, where participants reporting daily intake had the highest median knowledge scores

[21.5 (16.3–23.8)], while those rarely using remedies had the lowest [9.0 (8.0–10.0)], yielding a highly significant association ($p < 0.001$); attitude scores similarly increased with frequency of use ($p = 0.002$). In contrast, combining remedies with prescribed medicines was not significantly associated with knowledge ($p = 0.234$) but was significantly associated with more positive attitudes ($p = 0.001$), indicating that individuals with stronger beliefs in remedy effectiveness are more likely to engage in concurrent use, an important behavioural finding given the potential for herb–drug interactions. No significant associations were observed between either knowledge or attitudes and the practice of stopping prescribed medication ($p = 0.823$ and $p = 0.842$, respectively), indicating that this relatively small but high-risk behaviour is independent of the participants' KAP levels.

Table No. 4 : Knowledge, Attitudes, and Perceived Effectiveness of Home Food Remedies and Herbs in Study Participants (N = 100)

Effectiveness indicator	Category	Knowledge score Median (IQR)	Attitude score Median (IQR)	Knowledge test & p	Attitude test & p
Improvement in blood sugar and/or blood pressure after using remedies	No	4.0 (4.0–4.0)	14.0 (14.0–14.0)	$\chi^2 = 16.7$‡ $p < 0.001$**	$\chi^2 = 22$‡ $p < 0.001$**
	Yes	16.0 (14.0–18.0)	21.0 (19.0–21.0)		
	Not sure	12.0 (8.0–16.0)	17.5 (15.8–19.0)		
Improvement in energy, sleep, digestion and overall well-being	No	11.0 (8.5–13.0)	19.0 (18.0–20.0)	$\chi^2 = 10.76$‡ $p = 0.005$**	$\chi^2 = 9.42$‡ $p = 0.009$*
	Yes	16.0 (14.0–18.0)	20.0 (18.0–21.0)		
	Not sure	12.0 (7.0–14.0)	16.0 (15.8–17.3)		
Time taken to notice effects of remedies	A few days	11.0 (10.0–15.5)	19.0 (17.0–19.5)	$\chi^2 = 18.3$‡ $p < 0.001$**	$\chi^2 = 16$‡ $p = 0.001$**
	A few weeks	16.0 (14.0–18.0)	20.5 (19.0–21.0)		
	A few months	17.0 (15.0–23.0)	21.0 (17.5–21.0)		
	No noticeable effect	8.0 (7.0–9.0)	15.0 (14.0–16.0)		
Belief that remedies help	Yes	16.0 (14.0–18.0)	20.0 (18.0–21.0)	$\chi^2 = 2.24$‡	$\chi^2 = 10.87$‡

in daily disease control	Not sure	14.0 (8.5–17.5)	16.5 (15.3–18.0)	$p = 0.135$	$p < 0.001$**
Use of combination of multiple remedies	No	15.0 (12.0–17.0)	19.0 (18.0–21.0)	$\chi^2 = 8.20$‡ $p = 0.004$**	$\chi^2 = 0.256$‡ $p = 0.613$
	Yes	18.0 (15.0–22.5)	20.0 (17.5–21.0)		

Note. Values are reported as Median (Interquartile Range, IQR; 25th–75th percentile). ‡ Kruskal–Wallis test (≥ 3 groups). * $p < 0.05$; ** $p < 0.005$.

Table No. 4 reveals strong associations between perceived effectiveness and both knowledge and attitudes. Participants who reported improvement in their blood sugar and/or blood pressure after using home remedies showed significantly higher knowledge scores [16.0 (14.0–18.0)] and more favourable attitude scores [21.0 (19.0–21.0)] compared with those reporting no improvement [knowledge: 4.0 (4.0–4.0); attitude: 14.0 (14.0–14.0)] ($p < 0.001$ for both domains). Similar patterns were observed for perceived improvements in well-being indicators such as energy, sleep, and digestion (knowledge $p = 0.005$; attitude $p = 0.009$), and for the time taken to notice effects (knowledge and attitude $p < 0.001$). Notably, while attitudes were significantly associated with the belief that remedies help in daily disease control ($p < 0.001$), knowledge was not ($p = 0.135$), suggesting that beliefs may be shaped more strongly by personal and cultural conviction than by factual awareness. The use of combinations of multiple remedies was significantly associated with higher knowledge scores ($p = 0.004$), indicating that more knowledgeable participants tended to engage in more elaborate self-management practices. Together, these findings indicate that perceived effectiveness operates as a key driver of both engagement with and beliefs about traditional remedies, and is reinforced by a feedback loop in which informed users are also more likely to perceive benefit.

Table No. 5 : Knowledge, Attitudes, and Safety of Home Food Remedies and Herbs in Study Participants (N = 100)

Safety indicator	Category	Knowledge score Median (IQR)	Attitude score Median (IQR)	Knowledge test & p	Attitude test & p
Belief that natural remedies are inherently safe	No	18.0 (13.3–22.3)	21.0 (17.3–21.0)	Test = 5.44‡ $p = 0.066$	Test = 2.28‡ $p = 0.319$
	Yes	16.0 (14.0–17.8)	19.0 (18.0–21.0)		
	Not sure	12.0 (9.0–16.0)	18.0 (16.5–20.5)		
Perceived safety of home remedies /	Very unsafe	10.0 (10.0–10.0)	16.0 (16.0–16.0)	Test = 8.94‡	Test = 17.24‡
	Unsafe	15.0 (14.0–16.0)	16.5 (14.3–18.8)		

herbs for condition	Neutral	11.5 (6.8–16.0)	16.0 (14.0–16.5)	p = 0.063	p = 0.002**
	Safe	15.0 (12.0–18.0)	19.0 (18.0–21.0)		
	Very safe	16.0 (15.0–18.0)	21.0 (19.0–21.0)		
Informing healthcare professionals about remedy use	Always	15.0 (11.0–17.0)	19.0 (16.3–21.0)	Test = 8.75‡ p = 0.013*	Test = 7.9‡ p = 0.019*
	Sometimes	16.0 (14.0–18.0)	19.5 (18.0–21.0)		
	Never	17.0 (15.0–23.0)	21.0 (19.0–21.0)		
Perceived reliability of information sources	Low reliability	19.0 (16.5–19.5)	16.0 (16.0–18.5)	Test = 13.1‡ p = 0.001**	Test = 5.75‡ p = 0.057
	Moderate reliability	15.0 (11.0–16.0)	19.0 (17.0–21.0)		
	High reliability	17.0 (15.0–20.0)	21.0 (19.0–21.0)		
Verification of information with health professionals	Never	21.5 (17.8–23.0)	20.0 (17.8–21.0)	Test = 11.25‡ p = 0.024*	Test = 6.27‡ p = 0.180
	Rarely	17.0 (12.0–20.5)	21.0 (17.5–21.0)		
	Sometimes	16.0 (13.0–17.0)	19.0 (16.5–21.0)		
	Often	14.0 (9.3–15.8)	19.0 (18.0–19.8)		
	Always	16.0 (14.3–17.8)	21.0 (19.0–21.0)		

Note. Values are reported as Median (Interquartile Range, IQR; 25th–75th percentile). ‡ Kruskal–Wallis test (≥ 3 groups). * $p < 0.05$; ** $p < 0.005$.

Table No. 5 demonstrates that higher knowledge and more positive attitudes are significantly associated with safer behaviours related to home remedy use. Participants who informed their healthcare professionals about remedy use showed significantly different median knowledge scores (Test = 8.75, p = 0.013) and attitude scores (Test = 7.9, p = 0.019) across disclosure categories, indicating that better-informed and more positively oriented individuals tend to engage in more transparent communication with their providers. A statistically significant association was observed between attitudes and the perceived safety of home remedies (Test = 17.24, p = 0.002), with participants who rated remedies as “very safe” showing notably

higher attitude scores [21.0 (19.0–21.0)] than those rating them "unsafe" [16.5 (14.3–18.8)] or "neutral" [16.0 (14.0–16.5)], suggesting that favourable attitudes are closely tied to belief in inherent safety. Knowledge scores also differed significantly across perceived reliability of information sources (Test = 13.1, p = 0.001) and across categories of information verification with health professionals (Test = 11.25, p = 0.024). Together, these findings underscore that knowledge and attitude levels meaningfully influence safety-related behaviours including disclosure, source verification, and judgement of trustworthiness, all of which are critical for safe integration of traditional remedies into chronic disease care.

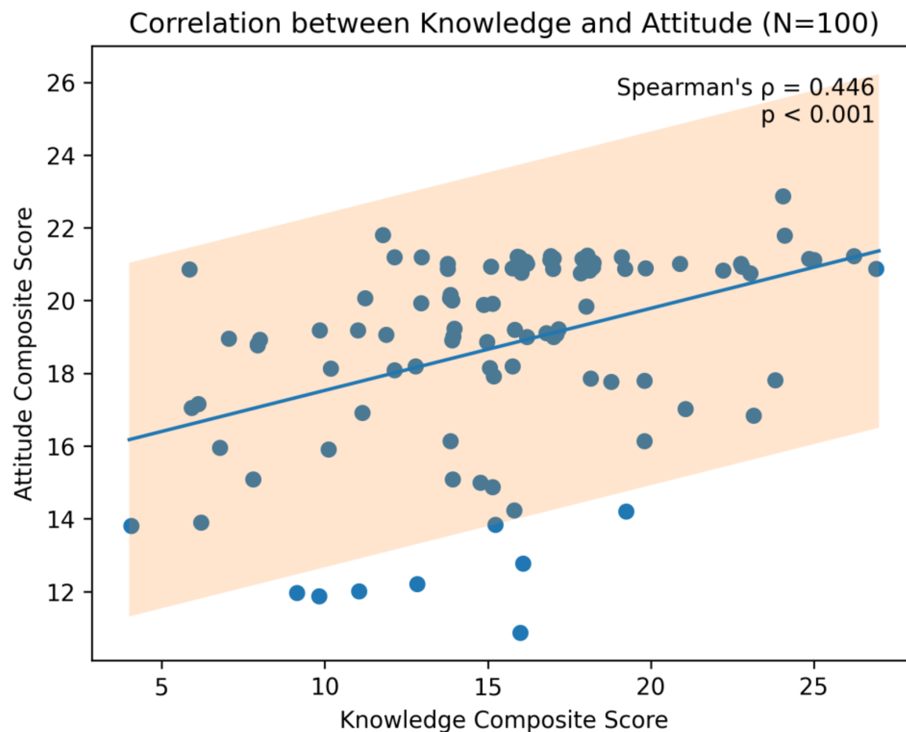

Figure No. 2 : Correlation between Knowledge and Attitude Composite Scores (N = 100)

Figure No. 2 illustrates the relationship between knowledge and attitude composite scores among the study participants. A moderate positive correlation was observed between the two variables (Spearman's $\rho = 0.446$, $p < 0.001$), indicating that higher levels of knowledge regarding home food remedies and herbs are associated with more favourable attitudes towards their use. The upward trend in the scatter plot, together with the fitted regression line, demonstrates a consistent increase in attitude scores with increasing knowledge scores. Although individual variability is present, the overall pattern represents a statistically significant association, highlighting that improved awareness and understanding may positively influence perceptions and acceptance of traditional remedies in the management of diabetes and hypertension. This co-variation supports the interpretation that strengthening evidence-based knowledge could plausibly translate into more reflective and informed attitudes toward home remedy use, although the cross-sectional nature of the design precludes causal inference.

Discussion

The present study demonstrates near-universal awareness and widespread use of traditional home food remedies among adults managing diabetes mellitus and/or hypertension in an urban Indian setting. Nearly all participants (99.0%) were familiar with such remedies, and 88.0% believed they support disease management. A majority (73.7%) reported perceived improvements in blood glucose or blood pressure,

consistent with previous findings on high herbal medicine use in chronic disease populations (Kifle et al., 2021; Hikaambo et al., 2022; Almalki et al., 2024).

Common remedies identified—including amla (73.0%), jamun (67.0%), fenugreek (66.7% females vs. 37.7% males, $p = 0.005$), black cumin (50.0%), turmeric, and garlic—align with earlier studies on culturally familiar food-based practices (Yadav et al., 2018; Vishnu et al., 2017). Turmeric emerged as the most frequently consumed remedy, often used daily or near-daily. Although evidence suggests potential benefits through antioxidant activity, improved insulin sensitivity, and vascular modulation, variability in preparation, dosage, and bioavailability limits standardisation (Shirzad et al., 2021; Ulkomah et al., 2024; Cortez-Navarrete et al., 2023).

Knowledge levels were moderate, with 40.0% demonstrating good knowledge, 32.0% average, and 28.0% poor (median: 16.0, IQR: 13.0–18.0), indicating persistent gaps. Participants with both diabetes and hypertension had significantly higher knowledge scores (median: 19.0, IQR: 15.5–23.8) than those with a single condition ($\chi^2 = 13.6$, $p = 0.001$), suggesting increased awareness with greater disease burden (Ahmed et al., 2019; Kifle et al., 2021). A moderate positive correlation between knowledge and attitude was observed (Spearman's $\rho = 0.446$, $p < 0.001$), with higher knowledge associated with more favourable attitudes (median: 19.0, IQR: 18.0–21.0). Attitudes were also associated with socioeconomic status ($\chi^2 = 7.82$, $p = 0.020$), with higher scores among upper-class participants (Raja et al., 2019).

Behavioural patterns reinforced this relationship. Participants preparing remedies at home had significantly higher knowledge (median: 17.0 vs. 8.0) and attitude scores (median: 21.0 vs. 19.0) than those using ready-made preparations (knowledge: $\chi^2 = 13.9$, $p < 0.001$; attitude: $\chi^2 = 13.3$, $p = 0.001$). Frequency of use was also significantly associated with knowledge ($\chi^2 = 26.5$, $p < 0.001$) and attitudes ($\chi^2 = 16.5$, $p = 0.002$), with daily users showing the highest scores, highlighting the role of experiential learning (Boateng et al., 2019; Widayati et al., 2025).

Perceived effectiveness strongly influenced continued use. Participants reporting improvements in blood sugar and/or blood pressure had significantly higher knowledge (median: 16.0 vs. 4.0) and attitude scores (median: 21.0 vs. 14.0) (knowledge: $\chi^2 = 16.7$, $p < 0.001$; attitude: $\chi^2 = 22$, $p < 0.001$). Additionally, 85.0% believed remedies helped maintain daily disease control, with many reporting improvements in energy, sleep, and digestion. However, these perceptions reflect subjective experiences rather than validated clinical outcomes (Shirzad et al., 2021; Thota et al., 2019).

Gender differences were evident, with females more likely to believe in remedy effectiveness (97.4% vs. 82.0%, $p = 0.020$) and demonstrating higher awareness of fenugreek ($p = 0.005$), reflecting their role in the transmission of traditional health practices (Ching et al., 2018).

Despite high usage, important safety concerns were identified. A significant association was observed between favourable attitudes and concurrent use of remedies with prescribed medications ($\chi^2 = 10.18$, $p = 0.001$), while knowledge showed no such association ($p = 0.234$), suggesting beliefs may influence behaviour more strongly than factual understanding. Additionally, 12.0% reported reducing or discontinuing prescribed medications, independent of knowledge or attitude, indicating the influence of other factors such as cost or cultural beliefs (Amaeze et al., 2018; Tadesse et al., 2022; Awad et al., 2017).

Perceptions of safety were influenced by preparation practices, with home-prepared remedies more likely to be perceived as safe ($\chi^2 = 20.9$, $p = 0.007$). While 62.6% believed all remedies are safe due to their natural origin, only 13.0% reported side effects and just 34.0% checked suitability before use, indicating a false sense of safety.

Disclosure to healthcare providers was limited, with only 46.0% consistently informing their doctor or dietitian, while 21.0% never disclosed. Reasons included fear of disapproval (91.0%), belief that doctors would not approve (84.0%), and perceived lack of necessity (59.0%). Higher knowledge was associated with better disclosure ($\chi^2 = 8.75$, $p = 0.013$) and verification of information ($p = 0.024$), although only 14.0% always verified remedies with professionals. These findings are consistent with global concerns regarding herb–drug interactions and low disclosure rates (Nguyen et al., 2020; Putthapiban et al., 2017; Kifle et al., 2021; Hikaambo et al., 2022).

Information sources were primarily TV/media (90.0%), internet (85.0%), and health professionals (78.0%). Interestingly, higher knowledge was associated with lower perceived reliability of sources ($\chi^2 = 13.1$, $p = 0.001$), suggesting greater critical appraisal among informed individuals (Poli et al., 2025; WHO, 2023a).

Conclusion

The present study highlights the widespread awareness and use of traditional home food remedies among individuals managing diabetes mellitus and/or hypertension, with most participants demonstrating familiarity and positive beliefs regarding their role in disease management. Commonly used remedies such as amla, jamun, fenugreek, black cumin, turmeric, and garlic reflect strong cultural integration and frequent consumption patterns. Knowledge levels were moderate, with higher awareness among individuals managing both conditions, and a positive relationship between knowledge and attitudes indicating that greater understanding is associated with more favourable perceptions. Practices such as home preparation and frequent use further reinforced this relationship, suggesting the role of experiential learning. Perceived effectiveness emerged as a major driver of continued use, with many participants reporting improvements in glycaemic control, blood pressure, and overall well-being, although these remain subjective. Gender differences indicated higher awareness and belief among females, highlighting their role in knowledge transmission. Despite these positive perceptions, important safety concerns were evident, including concurrent use with prescribed medications and occasional discontinuation of treatment, often influenced more by beliefs than knowledge. Perceptions of safety were shaped by the natural origin and home preparation of remedies, contributing to a false sense of security and limited precautionary behaviour. Disclosure to healthcare providers was inconsistent, with barriers such as fear of disapproval and perceived irrelevance, although higher knowledge was associated with better communication and verification practices. Overall, the findings underscore the interplay between knowledge, attitudes, and practices, where cultural beliefs and perceived benefits drive usage, while gaps in safety awareness and communication highlight the need for integrating evidence-based guidance within routine healthcare.

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