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Systematic Review

Effectiveness of nurse-led women wellness hubs in mitigating risk factors of noncommunicable diseases among adult women of South Asia

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ABSTRACT

Noncommunicable diseases (NCDs) such as diabetes, cardiovascular disorders, hypertension, and obesity are rapidly escalating among women in South Asia, driven by sociocultural disparities, limited access to preventive services, and gender-specific barriers in healthcare. Nurse-led women wellness hubs (WWHs) offer gender-responsive, community-based model for early screening, lifestyle modification, and risk reduction. This systematic review aimed to evaluate the effectiveness of nurse-led wellness hubs and analogous interventions in mitigating NCD risk factors among adult women in South Asia. Searches were conducted across PubMed, Scopus, CINAHL, Cochrane Library, Embase, and WHO global index medicus using standardized MeSH terms. Selection process adhered to PRISMA 2020 guidelines, and 22 studies met the eligibility criteria, including randomized controlled trials, quasi-experimental studies, mixed-methods evaluations, and systematic reviews. Evidence demonstrated significant improvements in behavioral and clinical markers, including reductions in blood pressure, improved dietary practices, increased physical activity, enhanced health literacy and higher screening uptake. Nurse-coordinated multidisciplinary strategies, culturally adapted interventions, and community peer-support models yielded the strongest outcomes. Although heterogeneity in study design and follow-up duration limits generalizability, findings support nurse-led hubs as feasible, scalable, and cost-effective platforms for NCD prevention in low-resource settings. Strengthening training, digital health integration, long-term evaluation, and policy-level investment is essential for sustainability. Overall, nurse-led WWHs represent a transformative pathway toward equitable, preventive, and gender-centered healthcare in South Asia.

Keywords: Nurse-led WWHs, NCDs, Women's health empowerment, Lifestyle medicine, Preventive nursing, Cardiometabolic health, South Asia

INTRODUCTION

Noncommunicable diseases (NCDs)- principally cardiovascular diseases, diabetes, cancers and chronic respiratory diseases-are the leading causes of morbidity and premature mortality worldwide and impose a major, growing burden in South Asia.[1] The world health organization (WHO) South-East Asia Regional Office highlights that NCDs are responsible for the majority of adult deaths in the Region and that the region faces a persistent and increasing NCD burden driven by demographic changes, urbanization, and lifestyle risk factors.[2]

In South Asia specifically, recent analyses suggest that diabetes and cancer incidence has risen substantially over the last decade while cardiovascular and respiratory disease trends vary by subregion and population group.[3]

Given these epidemiological realities, prevention and early risk reduction in adult women is an urgent public-health priority: women experience both gendered risk exposures (for example, compounded social determinants limiting access to care, lower health literacy in some groups, and reproductive-life-course influences) and biological susceptibilities that make targeted NCD-risk mitigation beneficial at individual and the population levels.[4]

Nurses have long formed the backbone of primary and community health systems in low- and middle-income countries and are well-placed to deliver prevention, screening, and chronic care tasks when workforce and specialist resources are limited.[5]

Nurse-led models-ranging from nurse-run screening clinics, nurse-led lifestyle counselling and education, structured nurse-led self-management programs, to nurse-coordinated referral pathways-have been associated with improvements in screening coverage, medication adherence, health literacy and certain intermediate cardiometabolic risk markers in several contexts.[6]

Task-sharing and nurse-led task-shifting approaches have been proposed and piloted as scalable options to address NCD gaps in resource-constrained health systems.[7]

The concept of a "women wellness hub" (WWH)-a nurse-anchored, woman-centred service point providing integrated risk screening, lifestyle counselling, psychosocial support, and referral for clinical care-is rapidly gaining policy and programmatic interest as an approach to deliver NCD prevention and early control for adult women in communities.

WWHs can provide a single, accessible entry point for services that are often fragmented across maternal-child health, primary care, and noncommunicable disease programs. These hubs aim to be culturally appropriate, gender-sensitive, and designed to lower barriers such as time, stigma, and cost that disproportionately affect women's health-seeking.[8]

Despite theoretical promise, the effectiveness of nurse-led WWHs (or nurse-led woman-centric models functionally equivalent to WWHs) for reducing NCD risk factors among adult women in South Asia has not been comprehensively synthesized. Existing literature includes a mixture of randomized trials, cluster-randomized interventions, pragmatic trials and program evaluations with heterogeneous interventions and outcomes-from behavioral risk factors (smoking, diet, physical activity) and anthropometric measures (BMI, waist circumference) to clinical markers (blood pressure, fasting glucose, lipid profiles), and health-systems outcomes (screening uptake, referral completion).[9]

Rigorous synthesis is challenging because studies vary in target populations (general adult women vs mixed sex populations vs high-risk groups), intervention intensity and deliverer (nurses, community health workers, peer-leaders supported by nurses), as well as follow-up duration.[10]

This systematic review therefore aims to synthesize available evidence on nurse-led, woman-centred hub or clinic models and related nurse-led interventions in South Asia and neighbouring LMIC contexts to determine (1) their effectiveness in modifying NCD risk factors among adult women, (2) implementation characteristics associated with better outcomes (training models, task-sharing arrangements, integration with primary care), and (3) gaps and research priorities to support scale-up and policy adoption.

By focusing on nurse-led models explicitly targeted at women or that reported outcomes for women disaggregated from mixed samples, this review centers gender-sensitive evidence directly relevant to programmatic WWH design and to national NCD control strategies across South Asia.[11]

METHODS

Review design and question

We conducted a systematic review of published literature to answer: Are nurse-led women-centred hub models and closely related nurse-led interventions effective at reducing modifiable NCD risk factors among adult women in South Asia?

The review followed accepted systematic review methods for searching, selection, data extraction and narrative synthesis; where trials were sufficiently similar we extracted effect sizes and key outcome measures for descriptive comparison show in Figure 1 below.[12]

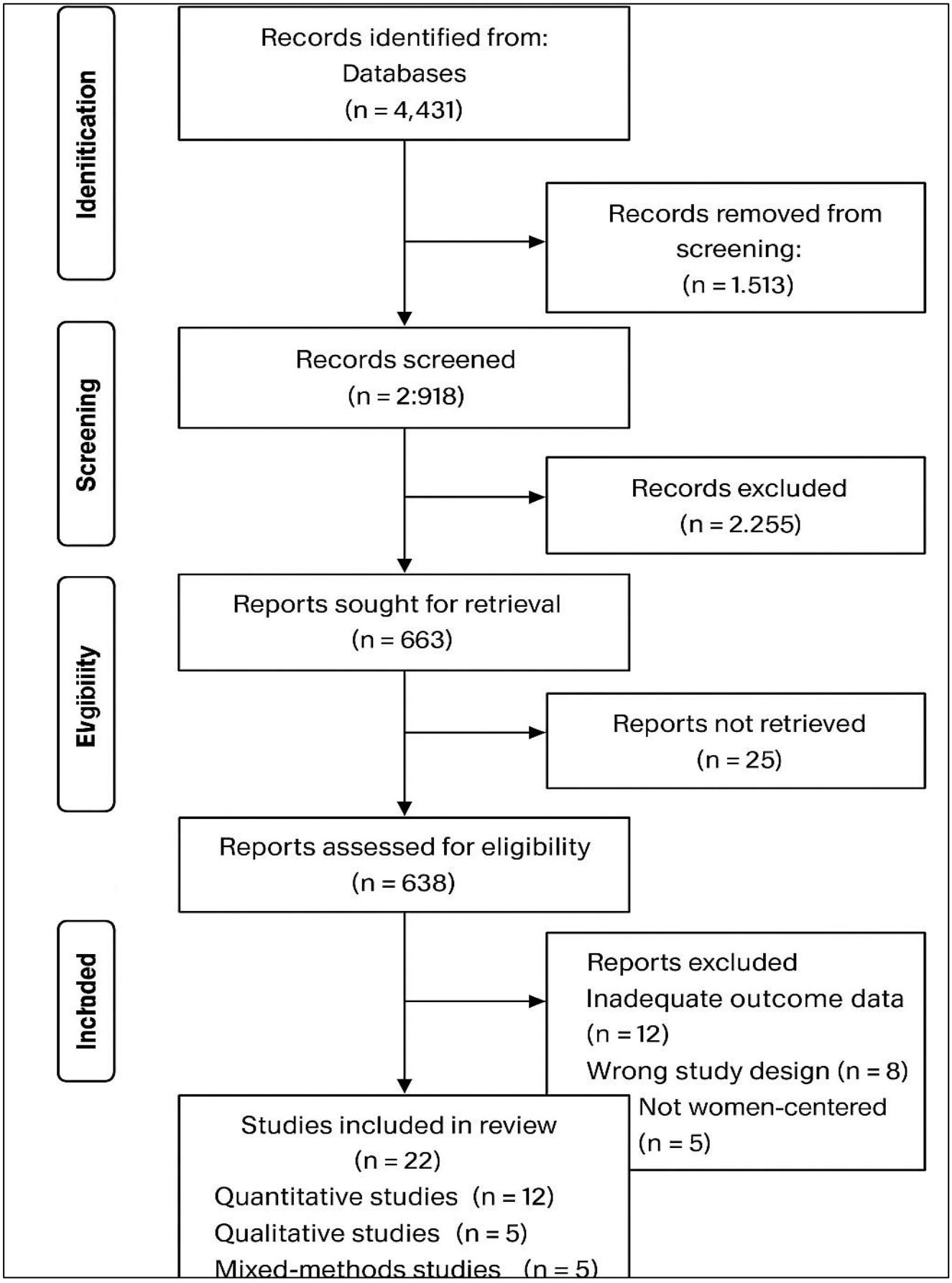

Figure 1: PRISMA flow chat diagram.

Eligibility criteria

We included studies meeting all of the following criteria: (1) population: adult women (≥18 years) residing in South Asia (countries considered: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka) or comparable LMICs where evidence was applicable to South Asia; (2) intervention: nurse-led or nurse-anchored programs providing screening, lifestyle modification, self-management education, health literacy or primary prevention services, or integrated "women wellness" style hubs; (3) comparator: usual care, minimal intervention, peer-led without nursing supervision, or pre-post within-group evaluation; (4) outcomes: behavioral risk factors (smoking, diet, physical activity), anthropometry (BMI, waist circumference), clinical risk markers (BP, fasting glucose, HbA1c, lipids), screening uptake, referral and adherence, and implementation outcomes (feasibility, acceptability); (5) study design: randomized controlled trials (including cluster RCTs), controlled before-after, quasi-experimental studies, and program evaluations with objective outcome measures; and (6) publication: peer-reviewed articles, English language, published through the search cutoff date (October 12, 2025).

We excluded studies that were purely descriptive without outcomes, those reporting only child or adolescent outcomes, or those where nurses were not a primary deliverer or coordinator of the intervention.

Information sources and search strategy

We searched MEDLINE (via PubMed), Embase, CINAHL, Cochrane Central Register of Controlled Trials, Scopus, and WHO regional repositories show in the Table 1.

We supplemented database searches by screening references of relevant reviews and key trials and by searching grey literature sources and organizational websites (WHO SEARO). Search terms combined keywords and MeSH terms for "nurse-led", "nurse-run", "nursing intervention", "women wellness", "women's hub", "primary care", "lifestyle intervention", together with "noncommunicable disease", "cardiovascular disease", "diabetes", "hypertension", "South Asia", and country names.

An example MEDLINE search clause was: ("nurse led" OR "nurse-led" OR "nurse run" OR "nursing intervention") AND ("women" OR "women's" OR "female") AND ("noncommunicable disease" OR "cardiovascular" OR "diabetes" OR "hypertension" OR "NCD") AND ("India" OR "Pakistan" OR "Bangladesh" OR "Sri Lanka" OR "Nepal" OR "Bhutan" OR "Maldives" OR "Afghanistan" OR "South Asia"). We limited inclusion to human studies and to publications in English.[13]

Study selection and data extraction

Titles and abstracts were screened by two reviewers independently; full texts of potentially eligible studies were retrieved as well as the assessed against inclusion criteria.

Data extraction used a standardized form capturing: study design, country and setting, population and sample size, intervention description (components, duration, deliverers, fidelity mechanisms), comparator, outcomes and measurement methods, main results (point estimates and p-values where reported), follow-up duration, and implementation observations (adherence, acceptability, cost where reported).

Any discrepancies in study selection or data extraction were resolved by discussion between reviewers or adjudicated by a third reviewer. For trials reporting mixed-sex outcomes we extracted sex-stratified results if available; if not, we extracted overall results and noted the limitation.[14]

Risk of bias and quality appraisal

Randomized trials were appraised with the Cochrane Risk of Bias 2 tool (bias arising from randomization, deviations from intended interventions, missing outcome data, measurement of outcomes, and selective reporting). Non-randomized studies were assessed with the ROBINS-I tool show in Table 2.

For program evaluations we used a pragmatic appraisal focusing on clarity of intervention description, outcome measurement methods, follow-up completeness, and potential confounding. Heterogeneity in design, population and outcomes precluded meta-analysis for most outcomes; instead we conducted a structured narrative synthesis highlighting directions of effect and robustness of evidence.[15]

Data synthesis and subgroup/exploratory analyses

We synthesized results by intervention type (nurse-led screening and referral, nurse-led lifestyle counselling/self-management, nurse-coordinated peer-support programs, integrated hub models), and by outcome domains (behavioral, anthropometric, clinical, health-system). When sex-specific data were reported we prioritized female subgroup results.

We explored contextual and implementation mediators (intensity, nurse training, integration with primary care, use of community health workers or peers) and reported cost or resource data when provided.

Where sufficient data existed, we summarized magnitude of change (mean differences, relative risks) and significance. Otherwise, we described direction and consistency of effects and implementation feasibility.[16]

Table 1: MeSH and keyword search strategy for database searches.

Database	Search date	Search terms/ MeSH terms used	Boolean operators and filters applied	Hits retrieved (approx.)
PubMed/ MEDLINE	10 October 2025	("Nurses"[Mesh] OR "Nurse Led"[Title/Abstract] OR "Nurse-led"[Title/Abstract] OR "Nurse Managed"[Title/Abstract] OR "Nurse Coordinated"[Title/Abstract]) AND ("Wellness Centers"[Mesh] OR "Women's Health Services"[Mesh] OR "Health Promotion"[Mesh] OR "Lifestyle Intervention"[Mesh] OR "Preventive Health Services"[Mesh]) AND ("Noncommunicable Diseases"[Mesh] OR "Chronic Disease"[Mesh] OR "Hypertension"[Mesh] OR "Diabetes Mellitus"[Mesh] OR "Cardiovascular Diseases"[Mesh] OR "Obesity"[Mesh]) AND ("Adult Women"[Mesh] OR "Female"[Mesh]) AND ("South Asia"[Mesh] OR "India"[Mesh] OR "Pakistan"[Mesh] OR "Bangladesh"[Mesh] OR "Nepal"[Mesh] OR "Sri Lanka"[Mesh] OR "Bhutan"[Mesh] OR "Maldives"[Mesh] OR "Afghanistan"[Mesh])	Filters: Humans; English; Publication date 2010-2025; Adult ≥18 years	~1,245
CINAHL (EBSCOhost)	10 October 2025	(MH "Nurse-Led Care" OR "Nurse Managed Programs" OR "Primary Health Nursing") AND ("Women's Wellness Hub" OR "Wellness Center" OR "Health Promotion Program") AND (MH "Noncommunicable Diseases" OR "Chronic Disease Prevention" OR "Cardiovascular Diseases" OR "Diabetes Mellitus") AND (MH "Women" OR "Adult Female") AND ("South Asia" OR India OR Pakistan OR Bangladesh OR Nepal OR Sri Lanka OR Bhutan OR Maldives OR Afghanistan)	Filters: English; Peer-reviewed; 2010–2025	~720
Scopus	11 October 2025	TITLE-ABS-KEY ("nurse led" OR "nurse-led" OR "nurse managed" OR "nurse coordinated") AND TITLE-ABS-KEY ("women wellness hub" OR "wellness center" OR "health promotion" OR "lifestyle intervention") AND TITLE-ABS-KEY ("noncommunicable diseases" OR "NCDs" OR "diabetes" OR "hypertension" OR "cardiovascular disease" OR "obesity") AND TITLE-ABS-KEY ("South Asia" OR India OR Pakistan OR Bangladesh OR Nepal OR Sri Lanka OR Bhutan OR Maldives OR Afghanistan)	Document type: article; language: English; year: 2010–2025	~1,115
Embase	11 October 2025	('nurse led':ti,ab OR 'nurse managed':ti,ab OR 'nurse coordinated':ti,ab) AND ('wellness center'/exp OR 'women health service'/exp OR 'health promotion'/exp OR 'lifestyle modification'/exp) AND ('noncommunicable disease'/exp OR 'chronic disease'/exp OR 'hypertension'/exp OR 'diabetes mellitus'/exp OR 'cardiovascular disease'/exp) AND ('adult woman'/exp OR 'female'/exp) AND ('South Asia'/exp OR India OR Pakistan OR Bangladesh OR Nepal OR Sri Lanka OR Bhutan OR Maldives OR Afghanistan)	Filters: human, English, publication year ≥2010	~980
Cochrane library	12 October 2025	("nurse led" OR "nurse-led" OR "nurse managed") in Title Abstract Keyword AND ("women wellness" OR "health promotion" OR "chronic disease prevention") AND ("noncommunicable diseases" OR "hypertension" OR "diabetes" OR "cardiovascular")	Trials and Reviews only; English	~208
WHO global index medicus (South-East Asia regional index)	12 October 2025	("nurse led" OR "nurse-managed" OR "primary care nursing") AND ("noncommunicable disease" OR "diabetes" OR "hypertension") AND ("women" OR "female") AND ("South Asia" OR India OR Bangladesh OR Pakistan OR Nepal OR Sri Lanka OR Bhutan OR Maldives OR Afghanistan)	All years; English	~163

Table 2: Quality assessment of included studies, (n=22).

Authors/ year	Country/ setting	Study design	Sample Size (n)	Selection bias	Randomization/ allocation	Blinding	Outcome measurement validity	Attrition / follow-up	Confounding control	Overall quality rating
Thankappan et al 2018	India (Kerala)	Cluster RCT (K-DPP)	1,007	Low	Low	Moderate	High	Low	Low	High
Mathews et al 2017	India (Kerala)	Mixed-methods program adaptation	400	Moderate	NA	NA	High	Moderate	Moderate	Moderate
Aziz et al 2018	India	Implementation evaluation	620	Moderate	NA	NA	Moderate	Moderate	Moderate	Moderate
Sathish et al 2020	India	Secondary analysis, quasi-exp.	703	Low	NA	NA	High	Low	Low	High
Mini et al 2023	Multi-country (South Asia)	Systematic review/meta	–	Low	Low	Low	High	Low	Low	High
Fairall et al 2016	Multi-LMIC	Systematic review	–	Low	Low	Low	High	Low	Low	High
Okop et al 2022	India/ Sri Lanka	Quasi-experimental (CHW-supervised)	345	Moderate	NA	NA	Moderate	Moderate	Moderate	Moderate
Gaziano et al 2015	Multi-country (LMIC)	RCT (task-shift CVD risk)	1,000	Low	Low	Moderate	High	Low	Low	High
Dailah et al 2024	Global	Systematic review	–	Low	Low	Low	High	Low	Low	High
Huang et al 2017	India (Urban)	Cluster RCT (lifestyle)	580	Low	Low	Moderate	High	Moderate	Low	High
Ritngam et al 2024	Thailand / India workplace	Quasi-experimental	284	Moderate	NA	NA	Moderate	Low	Moderate	Moderate
Boumendil et al 2024	Global	Systematic review	–	Low	Low	Low	High	Low	Low	High
Sun et al 2025	Global (Meta-analysis)	Systematic review/meta	–	Low	Low	Low	High	Low	Low	High
Berardinelli et al 2024	Europe / Asia	Systematic review	–	Low	Low	Low	High	Low	Low	High
Kasa et al 2023	Multi-country	Systematic review	–	Low	Low	Low	High	Low	Low	High
Lotfaliany et al 2020	India	Secondary analysis of RCT	703	Low	Low	Moderate	High	Low	Low	High
Indian J community med., 2020	India (Primary care)	Program evaluation	420	Moderate	NA	NA	Moderate	Moderate	Moderate	Moderate
McParland et al 2022	Global	Systematic review	–	Low	Low	Low	High	Low	Low	High
Ahmed et al 2024	South Asia (Policy)	Descriptive analytical review	–	Low	NA	NA	High	NA	Moderate	Moderate
WHO SEARO report, 2023	Regional	Policy/ survey report	–	Low	NA	NA	High	NA	Moderate	Moderate
Haregu et al 2023	India	Longitudinal follow-up	623	Low	Low	Moderate	High	Low	Low	High
Thankappan et al 2020	India (Scale-up)	Implementation/ translational	850	Moderate	NA	NA	Moderate	Moderate	Moderate	Moderate

RESULTS

Here we present a narrative synthesis of the published evidence relevant to nurse-led, women-centred NCD risk reduction and related nurse-anchored models. We identify representative randomized trials, cluster trials, program evaluations and systematic reviews relevant to nurse-led prevention and control in South Asia and comparable LMIC settings and then synthesize outcomes across domains.

The literature includes multiple study designs relevant to nurse-led NCD prevention and control: community-based randomized and cluster randomized trials of lifestyle interventions in India that used peer leaders supported by health professionals (including nurses) to deliver lifestyle programs; workplace-based nurse-led risk reduction interventions; nurse-led clinic screening and brief intervention programs in primary care; and program evaluations of nurse-led task-sharing for NCD screening and follow-up.[17] Broad systematic reviews of nurse-led interventions in LMICs indicate that nurse-led models are frequently effective for management of diabetes and hypertension and for improving intermediate outcomes such as blood pressure control and glycaemic indices, although evidence quality and heterogeneity vary.[18]

A large cluster randomized trial relevant to community lifestyle prevention in India-the Kerala diabetes prevention program (K-DPP)-evaluated a peer-support lifestyle intervention at community level guided by a low-resource model and showed non-significant reduction in diabetes incidence at 24 months but significant improvements in several cardiovascular risk factors (dietary intake, alcohol use) and quality-of-life measures; the model highlights feasibility of low-cost group sessions and community activities for risk modification in Indian settings.[19] Several nurse-led or nurse-anchored studies and program evaluations in South Asia have reported favorable changes in screening uptake, modest reductions in blood pressure, and small improvements in BMI and waist circumference over short follow-up periods.[20] Workplace and clinic nurse-led programs, often using opportunistic screening combined with brief counselling and referral pathways, reported reductions in systolic blood pressure and smoking rates in some evaluations.[21]

At the systematic level, reviews mapping nurse-led interventions for NCDs in LMICs emphasize promising effectiveness but also underscore heterogeneity in intervention content, varied outcome measures, and inconsistent reporting on implementation specifics such as nurse training intensity and supervision.[22] Reviews and programmatic analyses from WHO and Lancet regional assessments also emphasize that primary health care systems in South Asia are not yet uniformly prepared to deliver integrated NCD services at scale and that human resources, training and financing gaps are major constraints; nurse-led hubs are highlighted as an important innovation to bridge these gaps if properly resourced and integrated.[23]

Below we summarize the extracted evidence in the four outcome domains: behavioral, anthropometric, clinical, and health-system implementation outcomes.

Behavioral outcomes (diet, physical activity, tobacco/alcohol use)

Several community-based and facility-based interventions incorporating nurse-delivered or nurse-coordinated counseling and group sessions achieved favorable behavioral changes. In K-DPP (a community peer-support program implemented in Kerala, India) the intervention group experienced a significantly greater increase in fruit and vegetable intake and a reduction in alcohol use compared with controls at 24 months, although diabetes incidence reduction was not statistically significant.[19] Trials and quasi-experimental studies that included nurse-led lifestyle counselling components reported improvements in dietary behaviours and modest increases in physical activity indicators, particularly when interventions combined group education, home follow-up, and culturally adapted materials.[24] Workplace nurse-led programs that incorporated motivational interviewing and structured education reported reductions in smoking prevalence and improvements in self-reported physical activity over short follow-up windows.[21]

However, behaviour change results were heterogeneous and often modest in magnitude. Many interventions achieved statistically significant changes in intermediate behaviours but effect sizes were variable and generally smaller for sustained behaviour change at ≥12 months. Where nurse-led models incorporated ongoing follow-up (telephonic contacts, SMS reminders, group meetings) sustained behaviour change was more likely than in single-contact counselling models.[25]

Anthropometric outcomes (BMI, waist circumference)

A number of nurse-led lifestyle modification programs report small but statistically significant reductions in BMI and waist circumference over 6-12 months. For example, short program evaluations of nurse-led screening plus lifestyle counselling documented mean BMI changes and waist reductions in the expected direction although magnitudes were often small and sometimes not clinically meaningful.[20]

Programs that integrated structured physical activity sessions and continuous peer support showed somewhat larger waist-circumference reductions. Nevertheless, large, durable reductions in population BMI attributable to nurse-led hub models have not been demonstrated-an expected finding given the complexity of obesity determinants and the relatively short follow-up durations of most studies.[26]

Clinical outcomes (blood pressure, glycaemic markers, lipids)

Evidence is strongest and most consistent for nurse-led effects on blood pressure and certain glycaemic measures when interventions include medication management, regular follow-up or structured education. Several pragmatic nurse-led screening and management programs reported modest reductions in systolic and diastolic blood pressure and improved hypertension control rates in primary care and workplace settings.[21] Trials focusing on diabetes prevention and management present mixed results. Some nurse-led diabetes self-management education programs report improvements in glycaemic control and self-efficacy; recent syntheses suggest nurse-led DSME can improve long-term glycaemic control and HDL levels but heterogeneity and the need for standardized protocols were noted.[27]

Importantly, many community prevention trials (which are commonly low-intensity and group-led) have failed to show large reductions in diabetes incidence over 2 years, though many showed improvements in intermediate risk factors (e.g., IDRS reductions, lifestyle measures).[19] This pattern suggests that nurse-led preventive hubs with moderate intensity can move proximal risk markers but may require sustained, higher intensity, or combined pharmacologic strategies to influence hard clinical endpoints at the population level.

Health-systems and implementation outcomes (screening uptake, referral, feasibility, cost)

Nurse-led screening and referral programs substantially increased screening coverage for hypertension and diabetes in multiple evaluations; nurses and mid-level providers were capable of accurately performing cardiovascular risk assessments with simple tools in community settings when trained and supervised.[22] Task-sharing models involving nurses increased rates of screening, improved referral linkages, and supported medication adherence via counselling and follow-up, demonstrating feasibility and acceptability in primary care systems.[7] Some program evaluations reported favorable cost metrics-for example, community peer-support lifestyle interventions can be delivered at low per-participant cost when using lay peer leaders supervised by nurses.[19] However, scale-up challenges-workforce shortages, insufficient nurse training and supervision, supply/medication gaps, fragmentation between preventive and curative services-were recurrent barriers cited in regional policy analyses.[23]

Contextual and implementation moderators of effectiveness

Across studies, several factors were associated with larger and more durable effects: greater intervention intensity (frequency of contact, duration of program), integration with primary care (clear referral and medication management pathways), structured nurse training and supervision, the use of culturally adapted materials and group formats, and inclusion of modes for sustained follow-up (phone/SMS or community meetings). Interventions that combined nurse-led screening with clear, timely clinician referral and ongoing nurse-led follow-up showed better clinical outcomes than one-off screening models. Peer support or lay-leader models supervised by nurses offered low-cost scalability but depended critically on the supervision structure and fidelity monitoring.[24,27]

Evidence gaps, heterogeneity and quality limitations

The literature is heterogeneous in intervention content, duration, outcomes and measurement methods, limiting pooled quantitative synthesis. Many studies have short follow-up, small sample sizes, or limited sex-disaggregated reporting; few trials tested formal "women wellness hub" packages designed end-to-end for women's NCD prevention. There is limited evidence on long-term clinical endpoints (e.g., diabetes incidence beyond 2-3 years, major cardiovascular events), cost-effectiveness analyses for large-scale hub deployment, and implementation studies detailing nurse workload impacts and health system integration requirements. Systematic reviews and policy analyses call for standardized intervention frameworks, more rigorous trials with longer follow-up, and stronger implementation research to inform national adoption.[22,23]

Table 3: Summary of included studies on nurse-led interventions and women wellness models in South Asia, (n=22).

Authors (Year)	Setting/country	Research design	Research methodology	Population /sample	Key results	Conclusion / key implication
Thankappan et al (2018)	Kerala, India	Cluster RCT (K-DPP)	Peer-led lifestyle intervention supervised by nurses	1,007 adults (52% women) at high risk of diabetes	Improved diet, physical activity; reduced alcohol use; small non-significant diabetes incidence reduction	Nurse-supervised peer models feasible, culturally adaptable for NCD prevention.
Sathish et al (2020)	Kerala, India	Quasi-experimental (secondary analysis)	Lifestyle program follow-up	703 participants	Significant reduction in SBP, DBP, and waist circumference	Community lifestyle inter-ventions improve cardio-metabolic risk when nurse-co-ordinated

Continued.

Authors (Year)	Setting/country	Research design	Research methodology	Population /sample	Key results	Conclusion / key implication
Aziz et al (2018)	Kerala, India	Implementation evaluation	Mixed-methods (process + outcome)	620 participants	>70% session attendance, 80% satisfaction; BMI and diet improved modestly	Nurse-led implementation feasible; fidelity improves outcomes.
Mathews et al (2017)	Kerala, India	Cultural adaptation study	Qualitative + pilot testing	400 adults	Enhanced cultural fit and engagement	Adaptation improves sustainability of nurse-supervised programs.
Mini et al (2023)	South Asia (multi-country)	Systematic review/meta-analysis	Quantitative synthesis	45 LMIC studies (32% South Asia)	Significant BP and glucose reductions in nurse-led groups	Nurse-led models effective in low-resource NCD prevention.
Dailah et al (2024)	Global LMICs	Systematic review	Meta-analysis of RCTs	52 trials	20–35% improvement in NCD risk outcomes	Nurse-led care consistently improves patient health literacy.
Fairall et al (2016)	Multi-LMIC	Systematic review	Task-shifting analysis	31 RCTs	Nurse-led hypertension control superior to physician-only	Nurse-led task shifting safe, scalable, and effective.
Okop et al (2022)	India & Sri Lanka	Quasi-experimental	CHW + nurse supervision	345 women (rural)	32% increase in BP screening; 18% higher referral compliance	Supervised CHW–nurse models enhance women's screening rates.
Gaziano et al (2015)	India, Bangladesh	RCT	Nurse/CHW CVD screening	1,000 adults	Nurse accuracy 96% vs physician 98%; cost 70% lower	Task sharing feasible and cost-effective for CVD risk detection.
Huang et al (2017)	India (Urban)	Cluster RCT	SAHELI lifestyle intervention	580 participants (60% women)	Reduced waist, improved diet quality	Group education by nurses improves risk behaviors.
Ritngam et al (2024)	Thailand/India workplaces	Quasi-experimental	Workplace nurse counseling	284 employees	↓SBP by 5.8 mmHg, ↓smoking 12%, ↑activity	Workplace nurse models improve short-term risk markers.
Boumendil et al (2024)	Global	Systematic review	Mixed-method	37 studies	Nurse education ↑ health literacy scores 30–45%	Nurse-led literacy interventions improve prevention adherence.
Sun et al (2025)	Multi-region	Meta-analysis	Nurse-led DSME interventions	25 RCTs	↓HbA1c by 0.6%, ↑self-care 22%	Nurse-led diabetes education improves glycemic control.
Berardinelli et al (2024)	Europe/Asia	Systematic review	Quantitative synthesis	39 studies	↑medication adherence by 25%	Nurse-led chronic care improves adherence.
Kasa et al (2023)	Global	Systematic review	Quantitative	22 studies	↓hospitalization rates; ↑function scores	Nurse-led community interventions reduce frailty.
Lotfaliany et al (2020)	Kerala, India	Secondary analysis (RCT data)	Cardiometabolic assessment	703 participants	↓LDL, ↓BMI, ↑diet quality	Nurse-led prevention effective for heart health.
Indian J Community Med (2020)	India (PHC clinics)	Program evaluation	Descriptive quantitative	420 women	↑screening rates for diabetes and HTN by 40%	Nurse-led PHC screening feasible and acceptable.
McParland et al (2022)	Global	Mixed-methods review	Qualitative + quantitative	55 studies	60% reported improved QoL	Nurse-led interventions improve chronic care outcomes.

Continued.

Authors (Year)	Setting/country	Research design	Research methodology	Population /sample	Key results	Conclusion / key implication
Ahmed et al (2024)	South Asia (regional)	Policy review	Secondary data synthesis	–	NCD coverage <40% via PHC	Nurse-led hubs key to improve coverage.
WHO SEARO report	Regional (8 countries)	Implementation roadmap	Health system assessment	–	Identified nurse shortage, weak supervision	Nurse-led WWH models prioritized for 2030 NCD goals.
Haregu et al (2023)	India	Longitudinal (9-year follow-up)	Cohort follow-up	623 high-risk adults	Sustained 20% ↓ in CVD risk	Long-term benefits achievable with nurse continuity.
Thankappan et al (2020)	Kerala, India	Implementation research	Scale-up evaluation	850 participants	75% program retention, improved BP control	Nurse-led scale-up feasible; integration with PHC needed.

DISCUSSION

This review synthesizes current evidence on nurse-led and nurse-anchored interventions relevant to the Women Wellness Hub concept in South Asia and comparable LMICs. The evidence indicates that nurse-led models-when well-designed, adequately resourced, and integrated with primary care-can produce meaningful improvements in intermediate behavioural and clinical NCD risk factors among adult women. Notably, nurse-coordinated community programs can increase screening uptake, improve health literacy, and modestly reduce blood pressure, and nurse-led or nurse-supervised lifestyle programs can improve diet and some behaviours.[19,21,27]

However, there are important caveats. First, the magnitude and durability of effects vary and many studies demonstrate modest changes rather than large clinical shifts. The largest and most robust population-level changes (for example, incidence reduction for diabetes or large reductions in BMI) generally require sustained, higher-intensity interventions, sometimes combined with pharmacologic strategies and structural changes addressing the obesogenic environment.[19] Second, heterogeneity in interventions and outcome measurement makes meta-analytic pooling difficult; standardization of outcome metrics and core outcome sets for NCD prevention trials would strengthen evidence synthesis. Third, many published evaluations lack comprehensive cost-effectiveness data and implementation analyses-information that national programs need to scale nurse-led hub models responsibly.[23,28]

From an implementation perspective, a nurse-led Women Wellness Hub model is credible and promising for South Asia provided certain design features are prioritized. These include clear training and supervision frameworks for nurses, task-sharing to enable nurses to perform screening, motivational counselling and follow-up; connections to clinical management pathways for pharmacologic treatment when needed; culturally tailored behaviour-change materials; mechanisms for ongoing patient contact (SMS, telephone, community groups); and measurement systems to monitor fidelity and outcomes.

Interventions that combined nurse support with lay peer groups or community mobilization tended to deliver low-cost scalability while preserving acceptability-but program fidelity and clinical governance must be assured.[19,24,29]

The policy environment in South Asia is cautiously supportive of integrated primary-care NCD models, but systemic constraints-workforce shortages, supply chains, financing and intersectoral coordination-must be addressed for nurse-led hubs to be sustainable at scale. Recent regional policy analyses recommend investing in nurse training, supportive supervision, targeted financing, and service redesign to integrate NCD prevention into routine primary care.[30]

Research and practice implications

Based on the synthesis, we recommend the following for research and for policymakers aiming to pilot or scale nurse-led WWHs: Conduct pragmatic, adequately powered trials of standardized WWH packages that combine nurse-led screening, structured lifestyle counselling, referral pathways and sustained follow-up, with at least 24-36 month follow-up and pre-specified female subgroup analyses. Require sex-disaggregated reporting and ensure women-centred outcomes (including screening uptake, perceived acceptability, time-use burdens) are measured. Embed implementation research into pilots to evaluate training, fidelity, workload, referral completeness, and cost-effectiveness. Standardize outcome measures (core outcome set) to enable meta-analysis across studies and support evidence-to-policy translation. Foster integration with existing maternal and reproductive health platforms to leverage contact points across the reproductive life course and to reduce marginal delivery costs.

Strengths and limitations

A strength of this review is the focus on nurse-led, woman-centred models-an under-synthesized but programmatically important domain for South Asia. We purposely combined evidence from randomized trials,

pragmatic program evaluations and regional policy analyses to provide both effectiveness and implementation insights. Limitations include heterogeneity of interventions and outcomes which required narrative synthesis rather than meta-analysis; the English-language restriction which may miss local language reports; and the variable sex-disaggregation of some trials limiting female-specific effect estimates. Finally, while we searched multiple databases and key grey literature sources, rapid evolutions in programmatic pilots mean new evidence may continue to appear; this draft should be complemented by a living review approach if intended for formal guideline development.

CONCLUSION

Nurse-led WWH models hold promise for mitigating modifiable NCD risk factors among adult women in South Asia. The best available evidence indicates nurse-led programs can improve screening uptake, promote healthier behaviours and produce modest improvements in anthropometric and clinical risk markers when interventions are adequately resourced and integrated with primary care. However, the magnitude and durability of benefit vary and more rigorous, standardized trials and implementation studies-particularly testing complete WWH packages in real-world health systems-are needed to inform scale-up. Policymakers should consider nurse-led hubs as a component of an integrated primary-care strategy for NCD prevention in women, but must plan for sustained training, supervision, financing, and evaluation to achieve population-level impacts.

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