

INTRODUCTION

Promotion of physical activity (PA) has been a public health priority for decades.<sup>1</sup> Participation in regular PA decreases the risk of heart disease, hypertension, type 2 diabetes, osteoporosis, depression, breast and colon cancers and falls.<sup>2</sup> There is also strong evidence that active adults have a 30% lower risk of all-cause mortality. Despite the substantial health benefits of PA, only about half of U.S. adults are sufficiently active.<sup>3,4</sup>

Healthcare providers (HCP) have a vital role in PA promotion. It is estimated that 80% of U.S. adults see a HCP at least once per year, with 56% of all office visits occurring in the primary care setting, making this setting a valuable location for health promotion interventions. National professional and public health organizations have developed recommendations about HCPs addressing PA during patient encounters.<sup>5</sup> Reviews of PA counseling in primary care settings show a decline in the percentage of PA counseling delivered solely by physicians.<sup>6</sup> Nurses have demonstrated efficacy in changing other health behaviors including smoking and diet, therefore; examining the role of nurses in changing PA behavior is warranted. The purpose of this integrative review is to describe nurse-delivered PA interventions conducted in primary care settings and determine intervention attributes which led to positive changes in PA.



METHODS

A systematic search of existing peer-reviewed PA intervention studies conducted by nurses in the primary care setting was conducted through the following online databases: CINAHL, PubMed, PsycINFO, SportDiscus, Cochrane, and Sigma Theta Tau Research Repository. Key words used in the search included *physical activity* or *exercise* or *walking* and *primary health care*. All titles and abstracts were screened for eligibility by two reviewers independently. Papers were included if they were published in English from 1990-2014, had a RN or NP involved in intervention delivery and directly measured overall PA, exercise, or walking as an outcome. Intervention delivery was defined as the nurse having some direct interaction with the patient.



RESULTS

Figure 1. Flowchart of Selection of Studies

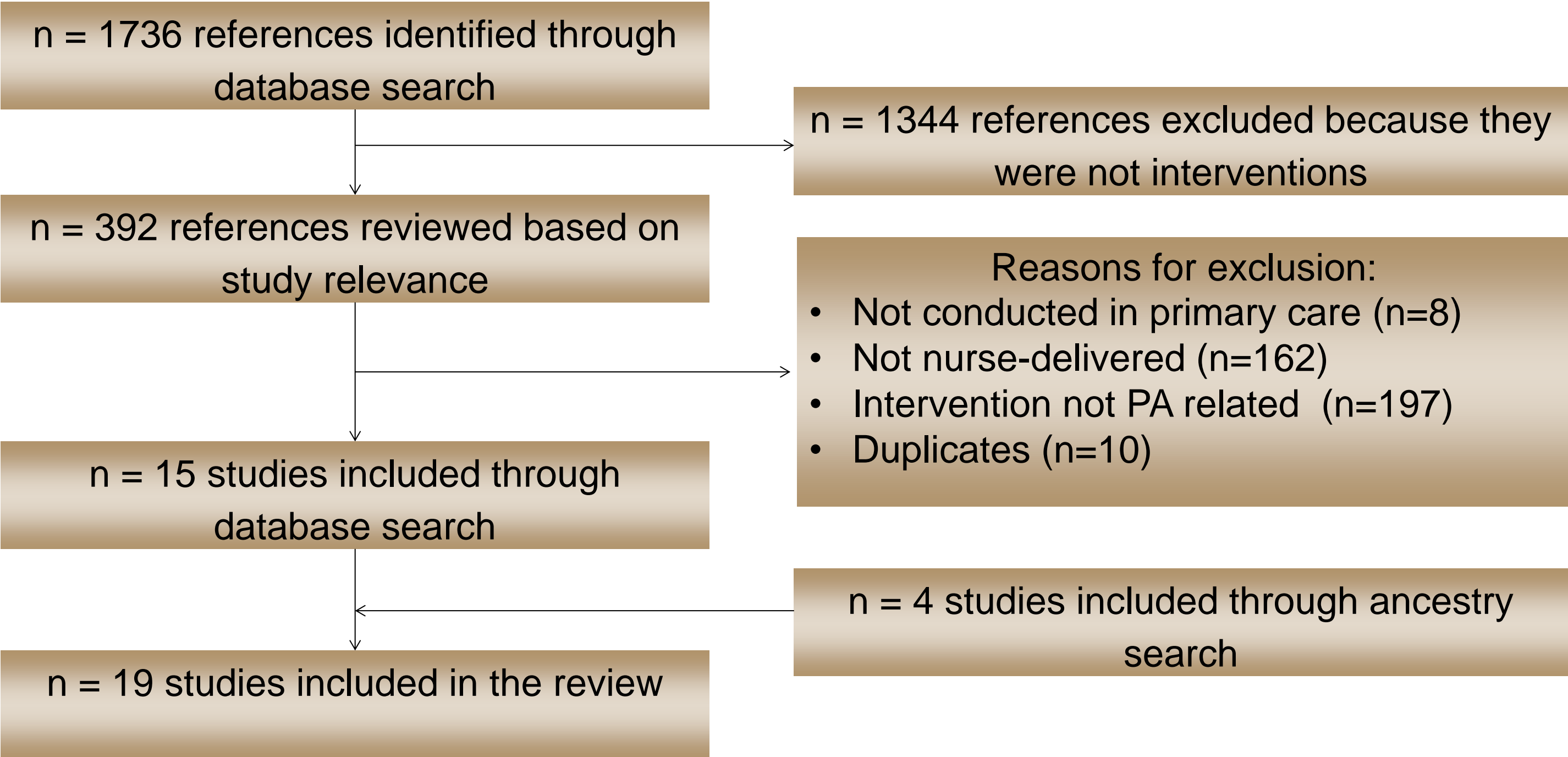


Table 1. Characteristics of Interventions (N=19)

	Characteristics	n	%
Location	International	13	68%
	United States	6	32%
Theory	None	9	47%
	Stage of Change (SOC)	7	37%
	Social Cognitive Theory (SCT)	3	16%
	PRECEDE-PROCEED Planning Model	1	5%
	Theory of Planned Behavior (TPB)	1	5%
	Adapted Physical Activity Model	1	5%
Role of nurse, provided	Counseling (telephone, face-to-face, web-based)	12	63%
	Supportive/motivational contacts (telephone, face-to-face)	6	32%
	Exercise training/monitoring	3	16%
	Devices (pedometer, activPal, accelerometer) or videotape	3	16%
	Exercise prescription	3	16%
Length of follow-up	≤ 6 month	9	47%
	> 6 months	10	53%
Study design	Randomized control trial (RCT)	11	58%
	Nonrandomized control trial	2	11%
	Uncontrolled before-after	6	32%

Note. Total value of the percentages may not equal 100% due to studies involving more than one of the categories listed.

RESULTS CONTINUED

Of the 19 studies included, 11 were RCTs, 2 were non-randomized control trials, and 6 used an uncontrolled pre-post design. Fourteen studies used self-report PA measures while 5 used objective measures. Ten interventions were guided by a health behavior theory. The intervention dose in 2 of the studies consisted of a one-time counseling session. In 8 other studies, an initial counseling or education session was supported with 1 to 4 more sessions over 3 to12 months. One study provided 21 sessions of cognitive behavior therapy with subjects over a 12-month period.

Post-intervention, 15 studies reported greater PA in intervention subjects than in control subjects, 11 of these studies included individual goal setting and/or interventions tailored to patient specific motivation or SOC. Ten out of 13 of the interventions delivered only by nurses succeeded in increasing PA, while 5 of the 6 interventions that also included other professionals demonstrated efficacy. Fifteen studies with multiple-dose interventions reported significant intervention effect on PA, while the only two studies with a one-time intervention did not.

SUMMARY & CONCLUSIONS

Interventions successful in increasing PA most often utilized tailored techniques such as providing SOC specific strategies or helping patients set individualized goals and involved multiple contacts and follow-ups with patients. These intervention strategies are well suited for nurses to implement because of the frequent contact they have with patients and often this contact is not as time-constrained as physician visits.

Four of the studies did not yield significant intervention effects on PA outcomes. These outcomes may have been attributed to sufficient levels of PA at baseline, underlying health conditions, low dose of the intervention or low intervention fidelity.

Findings indicate that nurse-delivered PA interventions in primary care show overall effectiveness in increasing PA levels in general adult populations. Future rigorously designed intervention studies which are guided by health behavior theory, use objective measures of PA, and follow participants for at least 12 months are needed to further guide PA promotion in primary care.

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