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A Systematic Review of Community Center Based Interventions in People with Diabetes

Objectives of this presentation

• Discuss the scope and implications of community health centers (CHCs) in the care of vulnerable populations in the United States

• Describe a systematic review of CHC-based interventions with main findings

• Discuss implications of the findings for future RESEARCH endeavors
How are we doing with health indicators?
Key Points

• Cardiovascular disease (CVD) is leading cause of death in U.S.
• Type 2 diabetes (diabetes) is an antecedent and moderating factor for CVD
  • African Americans (AAs) are more than twice as likely to die from diabetes
Community Health Centers

• Previously called neighborhood health centers
• Currently more than 1,300 CHCs in the U.S.
• Medical home for 27+ million people
  • 92% low income
  • 62% racial/ethnic minorities

HRSA, 2018; National Association of Community Health Centers, 2018
Diabetes Interventions in primary care or community

- Theory-based lifestyle interventions or social network-based
- Interventions using community health workers or peers
- Interventions using nurses or pharmacists
- Other approaches such as motivational interviewing or mHealth

Doshmangir et al., 2018; Spencer-Bonilla et al., 2017; Jeet et al., 2017; Alaofe et al., 2017; Fisher et al., 2017; Stephani et al., 2016; Thepwongsa et al., 2017; Massimi et al., 2017; Milosavljevic et al., 2018
Objective of current systematic review

• Synthesize evidence concerning the characteristics (i.e., types, contents, and delivery) and patient outcomes of CHC interventions in people with diabetes.
Design and Methods

• Conducted in 2018
• Four electronic database searches and hand searches of references in 2018 (PubMed, Embase, CINAHL, PsychINFO)
• Published in English; involved patients 18+ years; study conducted in the U.S.
• 2 reviewers independently screened potential studies for inclusion
Figure 1. PRISMA diagram

- **Identification**
  - Records identified through database searching: PubMed, CINAHL, Embase, Psych Info, and SCOPUS (n = 1,657)

- **Screening**
  - Records after duplicates removed (n = 892)
  - Title/Abstracts screened (n = 892)
  - Records excluded (n = 671)

- **Eligibility**
  - Full-text articles assessed for eligibility (n = 221)

- **Included**
  - Articles included in quantitative synthesis (n = 29)

- Full-text articles excluded, with reasons (n = 192)
  - 68 Wrong study design
  - 33 Abstract only
  - 25 Wrong intervention
  - 24 Wrong study population
  - 21 Supplement
  - 12 Wrong outcomes
  - 4 Wrong setting
  - 3 Wrong patient population
  - 2 Wrong language
Quality Appraisal

• Each included study evaluated for quality by two research assistants
• Joanna Briggs Institute scales used
• Quality scores ranges from 0 to 13 (experimental) and from 0 to 9 (quasi-experimental)

Tufanaru et al., 2017
Overview of studies

• 28 unique studies with one companion article
• 18 randomized trials with usual care (n=13) or enhanced care such as diabetes education packets (n=5)
• 21 solely focused on people with type 2 diabetes
• Sample sizes from 14 to 10,000
• Mostly female (52% to 89%)
Quality of studies

- Average quality score of 8.5 for 17 RCTs (range=3-10; possible max=13); 6.9 for 11 quasi-experimental studies (range=6-8; possible max=9)
- 8 of 17 RCTs were of high quality (9+); 8 medium and 1 of low quality
- 9 of 11 quasi-experimental studies were of high quality (7+); 2 of medium quality
Characteristics of CHC Interventions

- More than half used education (one-on-one, n=12 vs. group, n=4), often within routine clinic visits; phone counseling used in some studies (n=5). Others involved workshops or diabetic complication screenings with 1 study using daily text messages to promote health lifestyle changes.
Main Focus of CHC Interventions

- Reduction of hemoglobin A1C (n=22)
- Increase in diabetes knowledge about self-management topics (e.g., diet, exercise, smoking cessation, and stress) (n=11)
- Medication management (n=4)
- Behavioral change goals (e.g., patients create goals after completing a computer-based assessment of motivational readiness) (n=3)
- Increase in physical activity (n=2)
Providers of CHC Interventions

- A variety of health providers used: RNs (n=8), dietitians (n=6), medical assistants (n=6), community health workers (n=4), physicians (n=3), NPs (n=3), peer educators (n=2)
- Providers of CHC interventions often trained as certified diabetes educators
Intervention Fidelity

- Couldn’t be detailed due to lack of reporting fidelity
- Strategies used in the studies reporting fidelity:
  - Direct observation (n=1)
  - Intervention protocol adherence check (n=1)
  - Use of scripted manuals (n=2)
  - Recording of classes (n=1)
  - Protocol adherence documentation (n=1)
Effects of CHC Interventions

• Effects of CHC intervention on clinical outcomes varied.
  - 14 of 22 had significant decreases in HbA1c; 8 did not.
  - 5 of 5 using both individual and group education had significant decreases in HbA1c; 4 of 4 using phone counseling did not.
• Effects on other outcomes also varied.
  - 1 study showed goal attainment and reduction in HbA1c; 1 study showed goal attainment but no reduction in A1c.
  - Self-efficacy improved in 2 studies; 1 study with no change.
Discussion

• Type, duration, and intensity of CHC interventions varied.
• CHC interventions effective in HbA1c reduction
  - Mixed results were noted by studies, however
• Insufficient evidence to support CHC interventions in addressing mental disorders.
• Insufficient evidence concerning cost-effectiveness of CHC interventions.
• Many lacked methodological rigor.
Implications

- Strong need for studies to clearly elaborate the contents and processes of interventionists training
  - Selection and training with competency evaluation
  - Supervision and fidelity monitoring
- Future research needed with more rigorous study designs such as a priori power analysis, at least single-blinded design (data collector ≠ interventionist), intent-to-treat analysis, clear description of number and reasons for participant drop-outs
- Use of theoretical framework (used in only ½ studies)
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