EFFECTIVENESS OF EARLY IDENTIFICATION AND ELECTRONIC INTERVENTIONS FOR TEENS WITH RISK FACTORS FOR THE DEVELOPMENT OF HEART DISEASE AND DIABETES

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RESEARCH QUESTIONS

1. WHAT IS THE PREVALENCE OF RISK FACTORS FOR THE DEVELOPMENT OF HEART DISEASE AND DIABETES IN TEENS?

2. WHAT IS THE EFFECTIVENESS OF A TWO PART, REOCCURRING ELECTRONIC EDUCATION PROGRAM (REEP) IN MINIMIZING SELECTED RISK FACTORS FOR HEART DISEASE AND DIABETES?
   o PHYSICAL SCREENING: BP, HR, HT, WT/BMI, GUM INFLAMMATION
   o SERUM SCREENING: TC, LDL, HDL, TRIG, RR, FBG, TSH, HGB A1C, VITAMIN D, AND HSCRP

REEP PLAN

- REEP 1
  - STEWII WEBSITE
  - CONFIDENTIAL INTERACTIVE HEALTH HISTORY AND LIFESTYLE SURVEY
  - DETAILED INFORMATION ABOUT RISK FACTORS AND LIFESTYLE MODIFICATIONS TO REDUCE RISK

- REEP 2
  - STEWII EMAILS
  - STEWII SMS
  - STEWII VOICEMAIL
  - STEWII PHONE APP

STUDY METHODOLOGY

QUASI-EXPERIMENTAL, DESCRIPTIVE/PRE-POST SURVEY/REPEATED MEASURES

- PHASE 1
  - PART 1:
    - RECRUITMENT AND ENROLLMENT
    - COMPLETION OF HEALTH HISTORY AND FIRST LIFESTYLE SURVEY
    - 1ST SCREENING AND DISTRIBUTION OF FIRST *HEALTH INDICATOR REPORT*
    - IMPLEMENTATION OF THE REEP 1 AND 2
  - PART 2:
    - REPEAT SCREENINGS AT 3 MO.
    - CONTINUATION OF REEP 1 AND 2
- PHASE 2: REPEAT SCREENING
    - STUDENTS WHO GRADUATED REMOVED FROM THE STUDY
  - DISTRIBUTION OF *HEALTH INDICATOR REPORT*
  - CONTINUATION OF REEP 1 AND 2

PHASE I FINDINGS

PRE & POST MEANS

	Pre Mean (SD)	Post Mean (SD)
SBP	121 (±14.5)	114 (±13.3)
DBP	77 (±9.6)	71 (±9.3)
BMI	24.9 (±6.0)	24.9 (±6.0)

PEARSON'S CORRELATIONS

✧ SIGNIFICANT POSITIVE CORRELATION BMI & DBP (P<0.01)

✧ SIGNIFICANT INVERSE CORRELATION BMI & HDL (P<0.05)

✧ SIGNIFICANT INVERSE CORRELATION BMI & VITAMIN D (P<0.01)

SCREENING & REEP EFFECTIVENESS

PRE AND POST SCREENING RISK FACTORS REVEALED STATISTICALLY SIGNIFICANT T-TEST RESULTS (P< 0.001), MEANING THERE WERE IMPROVEMENTS IN THE FOLLOWING VALUES:

- ✧ TSH

- ✧ FBG

- ✧ VITAMIN D

- ✧ HBA1C

- ✧ HDL

- ✧ GLUCOSE

PHASE II FINDINGS

Table 2. Serum assessment value comparisons between participants and dropouts				
	Round 2		Round 3	
	Mean (SD), Not Missing	**Mean (SD), Missing**	**Mean (SD), Not Missing**	**Mean (SD), Missing**
Glucose	111.73 (19.39), n = 103	107.74 (5.40), n = 38	109.8 (6.21), n = 60	111.28 (31.65), n = 81
HgbA1c	5.52 (0.67), n = 103	5.38 (0.19), n = 38	5.45 (0.21), n = 60	5.50 (0.75), n = 81
Tot chol	154.84 (27.01), n = 103	157.24 (28.58), n = 38	155.47 (26.88), n = 60	155.51 (27.88), n = 81
Triglycerides	87.58 (116.89), n = 103	90.92 (40.76), n = 38	81.37 (34.02), n = 60	93.75 (131.43), n = 81
HDL** (p = .01)	51.37 (10.65), n = 103	46.21 (9.70), n = 38	49.40 (10.18), n = 60	50.41 (11.98), n = 81
LDL	87.32 (22.52), n = 102	92.76 (23.08), n = 38	89.78 (23.01), n = 60	88.06 (22.62), n = 80
TSH	2.55 (1.43), n = 103	2.58 (1.46), n = 38	2.51 (1.20), n = 60	2.59 (1.59), n = 81
Vitamin D	21.35 (7.29), n = 103	21.45 (8.44), n = 38	21.32 (6.74), n = 60	21.42 (8.20), n = 81

Note: HDL = high-density lipoprotein; HgbA1c = hemoglobin A1c; LDL = low-density lipoprotein; TSH = thyroid-stimulating hormone.

TRANSLATION OF RESEARCH TO PRACTICE

- PHYSICAL & SERUM RISK FACTORS ARE DETECTABLE IN AS EARLY AS ADOLESCENCE

- ELECTRONIC INTERVENTIONS EFFECTIVE IN MODIFYING LIFESTYLE BEHAVIORS (NOTICEABLE PREFERENCE FOR HANDHELD/MOBILE DEVICES)

- OUR STUDY FOUND ALARMINGLY LOW LEVELS OF VITAMIN D (INSUFFICIENCY TO DEFICIENCY)

- OUR STUDY CONTRIBUTES TO THE GROWING LITERATURE AND KNOWLEDGE BASE ON EMERGING PREDICTORS OF FUTURE CHRONIC ILLNESS MARKERS (HSCRP & VITAMIN D)

- OUR STUDY SUPPORTS THE CALL FOR REGULAR SERUM/PHYSIOLOGICAL SCREENING OF RISK FACTORS IN TEENS