GEMs of the Week

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GEMs
GOOD EVIDENCE MATTERS

FPIN
Family Physicians Inquiries Network

What's in this week's issue?

Week of February 24-28, 2025

SPOTLIGHT:
Give It Your Best Shot

- Fueling Empowerment: The Impact of Nutrition-Based Interventions on Blood Pressure
- Single-Dose Psilocybin Improves Outcomes in Treatment-Resistant Depression
- Urinating or Not? SGLT2 Inhibitors May Benefit Those with Stage 5 CKD and T2DM
- Can Text Alerts and Cash Prizes Drive Weight Loss?

Give It Your Best Shot

GEMs GOOD EVIDENCE MATTERS SPOTLIGHT

The Efficacy of Intra-Articular Injections in the Treatment of Knee Osteoarthritis: A Network Meta-Analysis of Randomized Controlled Trials

Anil U, Markus DH, Hurley ET, et al. The efficacy of intra-articular injections in the treatment of knee osteoarthritis: A network meta-analysis of randomized controlled trials. *Knee*. 2021;32:173-182. doi:10.1016/j.knee.2021.08.008

KEY TAKEAWAY: Compared to injections with saline, stromal vascular fraction (SVF) results in the greatest pain improvement at 4–6 weeks, six months, and 12 months, but not at three months. High-molecular weight hyaluronic acid (HMW) + corticosteroids (CS) results in the most improvement in function at 4–6 weeks and three months, autologous conditioned serum (ACS) at six months, and SVF at 12 months compared to saline.

STUDY DESIGN: Network meta-analysis of 79 randomized controlled trials (RCTs) (N=8,761)

LEVEL OF EVIDENCE: STEP 1

BRIEF BACKGROUND INFORMATION: Osteoarthritis (OA) affecting the knee is a common and debilitating joint disease. Intra-articular injections offer a less invasive treatment alternative to surgery to improve pain and function, however, it is not known if one agent is superior to others. This study compared multiple injectable agents with a placebo to determine if one agent was superior.

PATIENTS: Adults with knee OA

INTERVENTION: Different intra-articular injections

CONTROL: Saline placebo injections

PRIMARY OUTCOME: Pain and function

METHODS (BRIEF DESCRIPTION):

- RCTs that compared intra-articular injections of the knee, were published in English language peer-reviewed journals, and measured the outcomes using the Visual Analogue Scale (VAS) and the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) scores were included in the review.
    - The VAS is a subjective pain rating scale. Scores range from 0–100 with higher scores indicating worse pain.
    - WOMAC scores are used to evaluate pain, stiffness, and function. Scores range from 0–96 with higher scores indicating worse symptoms.
- Non-randomized trials, review studies, and studies that used patient outcome measures were excluded from the review.
- Included patients were predominately female (64%) with a mean age of 61 years old.
- Multiple injection agents were compared to saline placebo including ACS, bone marrow aspirate concentrate (BMAC), Botulinum toxin, CS, HMW, mesenchymal stem cells (MSC), ozone, platelet-rich plasma (PRP), plasma rich in growth factor (PRGF), and SVF.
- The primary outcome measured the improvement in knee pain, stiffness, and function based on the validated VAS and WOMAC scales.
- Treatments were ranked using a P-score defined as the frequentist analog to the surface under the cumulative ranking (SUCRA) probabilities.
    - P-scores rank treatment effectiveness on a scale from 0–1. A score of zero indicates the least effective treatment and one indicates the most effective treatment.
- Patients were followed for 4–6 weeks, three months, six months, and 12 months.

INTERVENTION (# IN THE GROUP): Not available

COMPARISON (# IN THE GROUP): Not available

FOLLOW-UP PERIOD: Varied (4 weeks to 12 months)

RESULTS:

Primary Outcome –

- SVF resulted in the largest improvement of knee pain compared to placebo as evidenced by VAS scores at several time points:
    - 4–6 weeks (P-score 0.91; mean difference [MD] –22; 95% CI, –38 to –6.9)
    - Six months (P-score 0.99; MD –39; 95% CI, –55 to –23)
    - 12 months (P-score 0.95; MD –30; 95% CI, –55 to –6.0)
- SVF did not improve knee pain at three months compared to placebo as evidenced by VAS scores (P-score 0.89; MD –36; 95% CI, –74 to 2.3).

- HMW + CS resulted in the largest improvement of knee pain, stiffness, and function compared to placebo as evidenced by WOMAC scores at 4–6 weeks (P-score 0.92; MD –21; 95% CI, –36 to –5.1).
- HMW + CS resulted in the largest improvement of knee pain, stiffness, and function compared to placebo as evidenced by WOMAC scores at three months (P-score 0.87; MD –25; 95% CI, –41 to –8.5).
- ACS resulted in the largest improvement of knee pain, stiffness, and function compared to placebo as evidenced by WOMAC scores at six months (P-score 0.96; MD –33; 95% CI, –49 to –15).
- SVF resulted in the largest improvement of knee pain, stiffness, and function compared to placebo as evidenced by WOMAC scores at 12 months (P-score 0.90; MD –24; 95% CI, –47 to –1.6).

LIMITATIONS:

- Discrepancies existed in reported outcome measures, as the follow-up was obtained at various points during the postoperative period.
- In the pooled analysis, the standardization of reporting limited the analysis.
- Only studies that included VAS and WOMAC scores were utilized.
- Inclusion criteria were limited to only those published in English.
- Most of the agents used are not familiar to or readily available to a family medicine clinician.

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Fueling Empowerment: The Impact of Nutrition-Based Interventions on Blood Pressure

Empowerment-Based Nutrition Interventions on Blood Pressure: A Randomized Comparative Effectiveness Trial

Moreira-Rosário A, Ismael S, Barreiros-Mota I, et al. Empowerment-based nutrition interventions on blood pressure: a randomized comparative effectiveness trial. *Front Public Health*. 2023;11:1277355. Published 2023 Nov 13. doi:10.3389/fpubh.2023.1277355

KEY TAKEAWAY: A salt reduction program does not significantly change 24-hour urinary sodium (Na^+) and potassium (K^+) excretion at 12 weeks compared to a healthy lifestyle program.

STUDY DESIGN: Multicenter, randomized comparative effectiveness-controlled trial

LEVEL OF EVIDENCE: STEP 2

BRIEF BACKGROUND INFORMATION: The Dietary Approach to Stop Hypertension (DASH) and Mediterranean diets have both been found to reduce cardiovascular disease (CVD) risk and prevent hypertension (HTN). There has not been a randomized study to directly compare the two diets and how they differ in their effects on lowering blood pressure. The study aimed to investigate the effectiveness of a salt reduction program compared to a healthy lifestyle program in reducing blood pressure (BP).

PATIENTS: Adults who are normotensive or hypertensive

INTERVENTION: Salt-reduction program

CONTROL: Healthy lifestyle program

PRIMARY OUTCOME: Urine samples for Na^+ and K^+ excretion

Secondary Outcome: BP, anthropometric measurements, adherence to a Mediterranean diet

METHODS (BRIEF DESCRIPTION):

- Participants were recruited from Lisbon through advertisements and social media campaigns.
- Adults, 20–70 years old who were either normotensive or hypertensive were included in the study.
- Patients with CVD, liver or kidney diseases, cancer, pregnant women, breastfeeding women, or women planning to become pregnant were excluded from the study.
- Participants chosen for the study were randomly assigned 1:1 to one of the two groups.
    - Participants randomized to the salt-reduction group received three educational sessions, five sessions at the grocery store, and eight phone counseling sessions. All sessions focused on lowering the salt content in foods.
    - Participants randomized into the healthy lifestyle group received three educational sessions and 12 phone counseling sessions. The sessions focused on the Mediterranean diet and healthy lifestyle changes.
- Participants were blinded to their assigned interventions.
- The primary outcomes measured 24-hour urine collection at baseline and 12 weeks for Na^+ and K^+ excretion.
- Secondary outcomes measured office BP to include systolic BP (SBP) and diastolic BP (DBP), anthropometric measurements, which included body weight, body mass index (BMI), and waist circumference, and adherence to the Mediterranean diet via Mediterranean Diet Adherence Screener (MEDAS) questionnaire.
    - Scores of the MEDAS range from 0–10, with a score of zero indicating lowest adherence and 10 indicating highest adherence.

INTERVENTION (# IN THE GROUP): 147

COMPARISON (# IN THE GROUP): 164

FOLLOW-UP PERIOD: 12 weeks

RESULTS:

Primary Outcome –

- There was no significant difference in the 24-hour urinary Na^+ and K^+ excretion between the salt reduction group and the healthy lifestyle group (P=.880 vs P=0.40, respectively).

Secondary Outcome –

- There was no statistically significant difference in SBP, DBP, weight, BMI, and waist circumference for participants in the salt-reduction program compared to the healthy lifestyle program.
- Individuals with the greatest adherence to the Mediterranean diet had a lower mean Na^+/K^+ ratio compared to both the average adherence and lowest adherence group at 12 weeks.
    - Average adherence (mean 3.2; 95% CI, 3.1–3.3)

- Lowest adherence (mean 3.6; 95% CI, 3.0–4.1)

LIMITATIONS:

- The salt-reduction group had fewer participants continue for the duration of the study as compared with the healthy lifestyle group.
- There was an imbalance in the gender population between the groups.
- The study did not have a no-intervention control group and did not have double-blinding.
- The primary outcome is not routinely used clinically and not especially clinically relevant. While the secondary outcomes were more clinically significant, none of the outcomes were definitively patient-centered.

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The views expressed herein are those of the author and do not necessarily reflect the official policy of the Department of the Air Force, Defense Health Agency, Department of Defense, or the US Government.

Single-Dose Psilocybin Improves Outcomes in Treatment-Resistant Depression

Single-Dose Psilocybin for a Treatment-Resistant Episode of Major Depression: Impact on Patient-Reported Depression Severity, Anixety, Function, and Quality of Life

Goodwin GM, Aaronson ST, Alvarez O, et al. Single-dose psilocybin for a treatment-resistant episode of major depression: Impact on patient-reported depression severity, anxiety, function, and quality of life. *J Affect Disord*. 2023;327:120-127. doi:10.1016/j.jad.2023.01.108

KEY TAKEAWAY: Administration of a single dose of 25 mg psilocybin improves measures of treatment-resistant depression and anxiety at three weeks compared to 1 mg psilocybin. Administration of 10 mg psilocybin improves some measures compared to 1 mg.

STUDY DESIGN: Phase 2, multicenter, international randomized controlled clinical trial

LEVEL OF EVIDENCE: STEP 2

BRIEF BACKGROUND INFORMATION: Depression is prevalent worldwide, and approximately one-third of all cases progress to treatment-resistant depression (TRD). Individuals suffering from TRD experience significantly lower quality of life and higher disease burden than those with major depressive disorder (MDD) who achieve an adequate response to either first or second-line treatment. These burdens have led to an increased interest in the therapeutic efficacy of psychedelics, most notably psilocybin; however, efficacy data is currently limited.

PATIENTS: Adults with MDD and TRD

INTERVENTION: Single dose of 25 mg or 10 mg psilocybin

CONTROL: Single dose of 1 mg psilocybin

PRIMARY OUTCOME: Anxiety, depression, affect and emotional state, function, quality of life

Secondary Outcomes: Adverse events

METHODS (BRIEF DESCRIPTION):

- 233 patients ≥18 years old meeting the Diagnostic and Statistical Manual of Mental Illnesses (DSM-5) criteria for both MDD without psychotic features and TRD were assigned randomly in a 1:1:1 ratio to the following treatment groups where, in each of them, a single dose of psilocybin was administered:
  - Psilocybin 25 mg
  - Psilocybin 10 mg
  - Psilocybin 1 mg
- The administration route was not provided.
- Following a 3–6 week run-in period, during which antidepressant or central-nervous system active medications were tapered down to discontinuation, a single dose of psilocybin was administered.
- Three weeks after psilocybin was administered, the Montgomerry-Asberg Depression Rating Scale (MADRS) was administered by blinded raters through a telephone call, which was used as the primary outcome of the study.
- For each efficacy measure (assessed at baseline and week 3) a total score was derived, which was used to assess efficacy endpoints. These endpoints were defined as the change in total score from baseline (the day before psilocybin administration) to total score at week three.
  - The General Anxiety Disorder-7 (GAD-7) scale assesses anxiety severity. A higher score represents worse anxiety.
  - The Quick Inventory of Depressive Symptomatology and Self-Report (QIDS-SR-16) assesses depression severity. A higher score represents worse depression.
  - The Positive and Negative Affect Score (PANAS) is an assessment of emotional states.
    - Positive Affect Score: A higher score represents more positive feelings
    - Negative Affect Score: A higher score represents more negative feelings
  - The Sheehan Disability Scale (SDS) measures function. A higher score represents greater impairment.
  - The Work and Social Functioning Adjustment Scale (WSAS) measures function, with a higher score representing greater impairment.
  - The European Quality of Life 5 Dimensions 3 Level Version (EQ-5D-3L) assesses the quality of life. A score of one represents the best quality of life.
  - The MADRS assesses depression severity, with higher scores indicative of worse depression.

- The European Quality of Life Visual Analog Scale (EQ-VAS) assesses quality of life. A higher score represents a better quality of life.
- The Digit symbol substitution test (DSST) assesses global cognitive function, with higher scores indicative of a normal state of cognitive function.

- The secondary outcome measured adverse events which included but were not limited to headache and nausea commonly, among other symptoms.
  - Serious or severe adverse events included suicidal ideation, suicidal behavior, intentional self-injury, hospitalization, codeine withdrawal syndrome, or adjustment disorder with anxiety and depressed mood.

INTERVENTION (# IN THE GROUP):

- Psilocybin 25 mg: 79
- Psilocybin 10 mg: 75

COMPARISON (# IN THE GROUP): 79

FOLLOW-UP PERIOD: 12 weeks

RESULTS:

Primary Outcome –

- Psilocybin 25 mg improved depression severity compared to 1 mg psilocybin (least square means [LSM] from baseline –2.8; 95% CI, –4.6 to –0.9).
- Psilocybin 10 mg did not improve depression severity compared to 1 mg psilocybin (LSM from baseline –1.6; 95% CI, –3.5 to 0.3).
- Psilocybin 25 mg improved positive affect compared to 1 mg psilocybin (LSM from baseline 6.2; 95% CI, 3.5–8.8).
- Psilocybin 10 mg did not improve positive affect compared to 1 mg psilocybin (LSM from baseline 1.6; 95% CI, –1.1 to 4.3).
- Psilocybin 25 mg decreased negative affect compared to 1 mg psilocybin (LSM from baseline –3.2; 95% CI, –5.6 to –0.8).
- Psilocybin 10 mg did not improve negative affect compared to 1 mg psilocybin (LSM from baseline –1.6; 95% CI, –4.1 to 0.8).
- Psilocybin 25 mg improved daily function compared to 1 mg psilocybin (LSM from baseline –6.5; 95% CI, –9.5 to –3.5).
- Psilocybin 10 mg improved daily function compared to 1 mg psilocybin (LSM from baseline –4.0; 95% CI, –7.0 to –1.0).
- Psilocybin 25 mg reduced anxiety compared to 1 mg psilocybin (LSM from baseline –1.8; 95% CI, –3.4 to –0.2).
- Psilocybin 10 mg did not reduce anxiety compared to 1 mg psilocybin (LSM from baseline –0.5; 95% CI, –2.1 to 1.0).

Secondary Outcome –

- Adverse events were seen in 84% of participants in the 25 mg group, 75% in the 10 mg group, and 72% in the 1 mg group.
  - No statistical analysis was performed on safety outcomes outside of noting them in the study.
- Overall, more serious adverse effects were reported in the 25 mg and 10 mg groups compared to the 1 mg group.
  - No statistical analysis was performed on safety outcomes outside of noting them in the study.

LIMITATIONS:

- There was no placebo group, as all patients involved in the study had discontinued previous therapies before the administration of psilocybin.
- No comparison was made between single-dose psilocybin in TRD to non-psilocybin therapies that participants may otherwise receive.
- The effectiveness of the psilocybin treatment doses was not explored in patients at risk of suicide since they were excluded from this trial.
- The population studied may lack ethnic diversity (92% White) and, as such, may be limited in how generalizable the results and conclusions are to some of the minority populations that were not as well represented in the studied population.

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Urinating or Not? SGLT2 Inhibitors May Benefit Those with Stage 5 CKD and T2DM

Sodium-Glucose Cotransporter-2 Inhibitors and the Risk for Dialysis and Cardiovascular Disease in Patients with Stage 5 Chronic Kidney Disease

Yen FS, Hwu CM, Liu JS, Wu YL, Chong K, Hsu CC. Sodium-Glucose Cotransporter-2 Inhibitors and the Risk for Dialysis and Cardiovascular Disease in Patients With Stage 5 Chronic Kidney Disease. *Ann Intern Med*. 2024;177(6):693-700. doi:10.7326/M23-1874

KEY TAKEAWAY: In patients with type 2 diabetes mellitus (T2DM) and stage 5 chronic kidney disease (CKD), sodium-glucose cotransporter-2 inhibitors (SGLT2is) significantly reduced the risk of long-term dialysis and cardiovascular events with no significant effect on all-cause mortality.

STUDY DESIGN: Target trial emulation study

LEVEL OF EVIDENCE: STEP 3

BRIEF BACKGROUND INFORMATION: The global incidence and prevalence of a CKD diagnosis, progression to dialysis, and death from CKD are increasing. SGLT2is are known to be kidney protective, but their outcomes have only been studied in patients with an estimated glomerular filtration rate (eGFR) >20. This study aimed to determine if SGLT2is remains nephroprotective in patients with T2DM and eGFR <20.

PATIENTS: Adults with T2DM and stage 5 CKD

INTERVENTION: SGLT2i use

CONTROL: No use of SGLT2is

PRIMARY OUTCOME: Incidence of long-term dialysis, hospitalization for heart failure, acute myocardial infarction (AMI), and all-cause mortality

Secondary Outcome: Incidence of diabetic ketoacidosis (DKA) or acute kidney injury (AKI)

METHODS (BRIEF DESCRIPTION):

- Data was collected from Taiwan's National Health Insurance Research Database's Diabetes (NIHRD), CKD, and Pre-End Stage Renal Disease Pay-for-Performance programs.
- Adults with stage 5 CKD (defined as eGFR <15) and T2DM (defined as 3 outpatient visits or 1 hospitalization for T2DM within 1 year) were included in the study.
- Patients >100 years old who ever received dialysis, never had antidiabetic medications, or with incomplete information in the database were excluded from the study.
- The treatment protocol was emulated using sequential trials. During week one of the study, if a patient received an SGLT2i, they were assigned to the study group.
    - The same number of patients who did not receive an SGLT2i were randomly selected and placed into the control group.
- This protocol was repeated weekly until October 2021 for a total of 298 consecutive trials.
- All study and control groups created in the sequential trials were pooled together to compare incidence rates of long-term dialysis, hospitalization for heart failure, AMI, and all-cause mortality.
    - Long-term dialysis was defined as at least three months of renal replacement therapy.
    - Mortality was defined as being discharged from the hospital with a death certificate or discharged for critical illness with no subsequent medical records found for at least one year.
- The secondary outcomes measured the incidence of DKA and AKI during hospital admissions while on SGLT2is.
- All other outcomes were defined using the International Classification of Disease (ICD) diagnosis code during hospitalization.

INTERVENTION (# IN THE GROUP): 23,854

COMPARISON (# IN THE GROUP): 23,892

FOLLOW-UP PERIOD: Up to 5.4 years

RESULTS:

Primary Outcome –

- SGLT2i use in patients with T2DM and stage 5 CKD resulted in a decreased risk of the following compared to SGLT2i non-users:
    - Long-term dialysis (adjusted hazard ratio [aHR] 0.34; 95% CI, 0.27–0.43)
    - Hospitalization for heart failure (aHR 0.80; 95% CI 0.73–0.86)
    - AMI (aHR 0.61; 95% CI, 0.52–0.73)
- There was no significant difference in risk for all-cause mortality in patients using SGLTis compared to SGLT2i non-users (aHR 1.1; 95% CI, 0.99–1.2).

Secondary Outcome –

- SGLT2i use in patients with T2DM and stage 5 CKD decreased the risk of DKA compared to SGLT2i non-users (aHR 0.78; 95% CI, 0.71–0.85).
- SGLT2i use in patients with T2DM and stage 5 CKD decreased the risk of AKI compared to SGLT2i non-users (aHR 0.80; 95% CI, 0.70-0.90).

LIMITATIONS:

- The observational nature of a target trial emulation study makes it vulnerable to confounding variables despite imitating randomized controlled trials. Specific examples for this study include family history, smoking status, alcohol consumption, diet, and physical activity which were not recorded in the database used.
- Generalizability is limited by the inclusion of only patients in Taiwan (mainly Chinese ethnicity) with both stage 5 CKD and T2DM.
- Though accounted for as covariates, there were significant differences in the distribution of age, comorbidity, and medication use between the two groups.
- No assurance of the patient's remaining CKD stage 5 for the entire follow-up period as no data was available on repeat renal function or proteinuria testing.
- The study's aim was to investigate long-term outcomes in patients with eGFR <20, however, only patients with eGFR <15 and T2DM were included leaving a possible gap in knowledge of outcomes for patients with eGFR between 15–20.

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Can Text Alerts and Cash Prizes Drive Weight Loss?

Text Messages with Financial Incentives for Men with Obesity: A Randomized Clinical Trial

Hoddinott P, O'Dolan C, Macaulay L, et al. Text Messages With Financial Incentives for Men With Obesity: A Randomized Clinical Trial. *JAMA*. 2024;332(1):31-40. doi:10.1001/jama.2024.7064

KEY TAKEAWAY: For obese men, daily behavioral text messages + financial incentives improve weight loss at 12 months compared to men not receiving daily text messages. Text messages alone do not significantly improve weight loss.

STUDY DESIGN: Multicenter, blinded randomized controlled trial

LEVEL OF EVIDENCE: STEP 3 (downgraded due to small sample size and lack of diverse ethnic population)

BRIEF BACKGROUND INFORMATION: Obesity affects 800 million worldwide, leading to serious health consequences such as type 2 diabetes mellitus (T2DM) and cardiovascular disease (CVD). Men are less likely to participate in weight loss interventions compared to women. Prior studies have shown text messages with behavior change interventions improve weight loss. However, no trials included a large portion of men. This study aimed to explore how text messages with financial incentives affected weight loss in men.

PATIENTS: Adult obese males

INTERVENTION: Text messages with or without financial incentives

CONTROL: Waitlist

PRIMARY OUTCOME: Weight change

Secondary Outcome: Absolute weight change, any weight loss, weight loss of ≥5%, weight loss of ≥10%

METHODS (BRIEF DESCRIPTION):

- Patients were recruited from family practices and informational stands in three UK communities.
- Men ≥18 years old with a BMI of ≥30 were included in the study.
  - Mean demographics: 50 years old, BMI 38, and 94% identified as White.
- Patients without a mobile phone, planned for bariatric surgery in the next 12 months, and those who had participated in a weight loss intervention in the past six months were excluded from the study.
- Patients were randomized 1:1:1 to the following groups: Text messages + financial incentive, text messages alone, or waitlist (control).
  - The two intervention groups received daily text messages that included weight management evidence, informative resource links, and behavior change techniques.
  - The financial incentive group in addition to the daily text messages was informed they would receive $64 for 5% weight loss at three months, $191 for 10% weight loss at six months, and an additional $254 if maintained the 10% weight loss at the 12-month mark for a total of $490 throughout the trial.
  - All three groups received a pedometer, access to weight management evidence, and a personal login to track their weight and step count.
- The primary outcome was weight change expressed as a percentage of baseline weight at 12 months.
- Secondary outcomes were absolute weight change measured in kilograms and the percent of participants with any weight loss, weight loss of ≥5%, and weight loss of ≥10%.

INTERVENTION (# IN THE GROUP):

- Text messages + financial incentives: 196
- Text messages alone: 194

COMPARISON (# IN THE GROUP): 195

FOLLOW-UP PERIOD: 12 months

RESULTS:

Primary Outcome –

- Text messages + financial incentives resulted in greater weight loss compared to the waitlist group (between-group mean difference [MD] –3.2%; 97.5% CI, –4.6 to –1.9).
- Text messages alone did not result in significant weight change compared to the waitlist group (between-group MD –1.4%; 97.5% CI, –2.9 to 0.0).

Secondary Outcome –

- Text messages + financial incentives resulted in significant absolute weight change compared to the waitlist group (between-group MD –4.1 kg; 97.5% CI, –6.0 to –2.3).

- Text messages alone did not result in significant absolute weight change compared to the waitlist group.
- Text messages + financial incentives resulted in a higher percentage of any weight loss compared to the waitlist group (risk difference [RD] 17%; 97.5% CI, 5.6–29).
- Text messages alone resulted in a higher percentage of any weight loss compared to the waitlist group (RD 6.2%; 97.5% CI, 6.6–19).
- Participants in the text messaging + incentive group had a greater probability of losing ≥5% of weight compared to the waitlist group (odds ratio [OR] 3.6; 97.5% CI, 2.0–6.6; NNT=4)
- Participants in the text messaging alone did not have a greater probability of losing ≥5% of weight compared to the waitlist group.
- Text messages + financial incentives resulted in a higher percentage of people able to obtain ≥10% weight loss compared to the waitlist group (RD 20%; 97.5% CI, 11–30).
- Text messages alone did not result in a significant percentage of people being able to obtain ≥10% weight loss compared to the waitlist group.

LIMITATIONS:

- Limited generalizability was present due to the patient population being mostly male and 95% White.
- A significant dropout rate was present in the text messaging alone group (34%) compared to the other two groups (22–26%).
- Unable to determine if text messaging with financial incentives was more effective than text messaging alone since a 2:2 factor design was not implemented in the study.

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