DETERMINATION OF BEST RECRUITMENT PRACTICES FOR ADULTS WITH PREDIABETES: A LITERATURE REVIEW

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Introduction:

Type 2 Diabetes Mellitus (DM), a condition in which blood glucose levels are elevated, is a leading cause of morbidity and mortality in the United States[1]. The American Diabetes Association estimates that approximately 34.2 million Americans have type 2 DM[1] and approximately 88 million Americans are classified as having prediabetes[2]. Prediabetes is a state of intermediate hyperglycemia, where blood glucose levels are above normal but below the threshold for type 2 DM[1]. Physical activity and dietary changes aimed at decreasing body weight and managing blood glucose levels, are the primary treatments for preventing the transition from prediabetes to overt type 2 DM[3]. Dr. Halliday's Prediabetes, Exercise, and Appetite Regulation (PEAR) study aims to better understand how differing modalities of exercise – particularly resistance training – influence neuronal, hormonal, and behavioral mechanisms of appetite regulation in previously sedentary adults with overweight/obesity. There is a need to not only understand what interventions will have the greatest impact on preventing the progression of prediabetes to type 2 DM, but also how to engage adults with prediabetes in lifestyle interventions. Thus, the purpose of this literature review was to identify best practices for recruiting and enrolling adults with prediabetes and overweight/obesity in to exercise-based clinical trials.

Methods:

The literature review process included four major parts: 1) article finding, 2) screening for relevant articles, 3) gathering data on the screened articles, and 4) comparing the results gathered from the literature review to the PEAR trial data. The search string was used in three databases (Web of science, Scopus, and PubMed) using the keywords: "prediabetes," "exercise intervention," "clinical trial," and "adult." Articles were then screened down based on duplicates, title/abstract, and full text. Data was then gathered from the applicable articles and compared to the PEAR study.

Results:

A total of 82 articles were found at the beginning of the literature review. Following duplicate screening, 40 articles remained. Following the title/abstract exclusion 14 articles remained; lastly, following the full text exclusion, 10 articles remained.

Common inclusion / exclusion criteria in the included manuscripts were a BMI range of 25 – 40 m/kg^2, adults classified with prediabetes, and sedentary lifestyles whom were otherwise healthy. Common recruitment methods were the use of advertisements within the local area including social media posts and flyers as well as pulling data from hospital databases fulfilling the study's inclusion criteria. Conversion rates were determined based on initial interest divided by individuals who completed the study. Only 5 / 10 studies represented their conversion rates

(Article 1: 5.8%; Article 2: 87%; Article 5: 10%; Article 7: 74%; Article 10: 78% [4-8]. PEAR study inclusion/exclusion criteria seemed to be more stringent compared to the other studies. The PEAR study's inclusion criteria was a BMI range 27-40 m/kg^2, adults 18-45 years old classified with prediabetes living a sedentary lifestyle with no other uncontrolled active or chronic health problems. In addition, the PEAR study required an HbA1c test compared to only 3/10 studies that required this. Recruitment methods were primarily through the EPIC health database connected to the University hospital as well as advertisements placed around the University hospital and main campus. The PEAR trial conversion rate (7%) was lower than 4/5 reported conversion rates.

Conclusions:
The PEAR study used both similar and different recruitment methods compared to the other studies. Pulling health records and contacting individuals who filled the inclusion criteria for the study seemed to be common among all the studies. The placement of advertisements around the University hospital and main campus, however, was ineffective. The PEAR trial could have potentially found more success placing advertisements around Salt Lake City's downtown area in addition to the University campuses. The PEAR trial's conversion rate was lower than 4/5 of the studies that reported conversion rates. This could be due to the more stringent inclusion/exclusion criteria the PEAR trial had compared to the other tests. Potentially tweaking these criteria could lead to greater enrollment of participants.

This literature review included a few limiting factors. The conversion rate comparison was hard to see the complete picture because 5/10 articles did not represent those numbers. In addition, recruitment methods were often vague within the studies. Future studies should include their initial response-enrolled conversion rates. Lastly, clearly outlining the study's recruitment methods would be beneficial to other studies facing enrollment challenges.

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