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Get Fit and Quit: A Novel Program for Perinatal Tobacco Cessation

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Purpose

The purpose of Get Fit and Quit (GFAQ) was to test the feasibility, acceptability, and efficacy of a comprehensive tobacco cessation program, including social support and group exercise, for women of childbearing age with substance use disorders (SUD). Kentucky leads the nation in perinatal tobacco and opioid use, and to the best of our knowledge, there are no current perinatal tobacco treatment programs for women with SUD that have reported participant cessation.

Methods

GFAQ is a 6-month program, including 10 sessions that were held at a community YMCA. Each session included physical activity and evidence based tobacco treatment. Intervention outcomes were measured at baseline, five weeks, three months, and six months via participant survey and biochemical validation of tobacco use. Preset urine cotinine limits validated smoking status; while CO levels were also measured. The Fagerstrom Test for Nicotine Dependence is a 6-item tool to measure individual level of dependence. Qualitative interview were conducted to determine acceptability of GFAQ.

Results

This study consisted of 23 women of childbearing age (pregnant: 5; nonpregnant: 18). Nearly all (21 of 23) participants were White, Single and had a household income of less than $20,000. Sixteen participants were enrolled at the baseline session of GFAQ. Among the eleven participants who finished the study, nicotine dependence is significantly lower (p=0.004) at GFAQ session five compared to scores at enrollment, based on the Fagerstrom scores. There were no significant changes in CO levels; however, levels were lower at study conclusion. Three women have successfully quit smoking using the GFAQ program.

Conclusions and Implications for Practice

The results from this program support GFAQ as a feasible program with promising results impacting level of dependence. The finding that women with SUD were successful in attaining smoking cessation through the GFAQ program highlights the efficacy of this novel program. The clinical implications are that reduced levels of CO reduce the risk for adverse pregnancy outcome and decreased levels of dependence increase the likelihood of quitting.

Title:
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Keywords:
Physical activity, Smoking cessation and Substance use disorders

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Abstract Summary:

The purpose of this pilot program was to determine the relationship between physical activity, carbon monoxide levels, and level of nicotine dependence in a sample of women with substance use disorders who participated in the novel program for perinatal tobacco cessation, Get Fit and Quit (GFAQ).

Content Outline:

1. Introduction
    1. Purpose
        1. To examine the impact of Get Fit and Quit (GFAQ) on nicotine dependence and carbon monoxide in a population of women of childbearing age with substance use disorders (SUD) who participated in the tobacco cessation program.
        2. This program incorporated comprehensive tobacco cessation education with physical activity and group support to assist women to quit smoking.
    2. Significance
        1. Kentucky leads the nation in perinatal tobacco usage (CDC, 2014).
        2. Physical activity has been shown to improve participants' confidence with quitting and decrease their nicotine cravings (Ussher, M. et al. 2012).
        3. Currently there is limited tobacco research for women with SUD, with no programs reporting any successful participant cessation.
        4. Tobacco use is the most modifiable risk factor for the occurrence and severity of Neonatal Abstinence Syndrome (Substance Abuse and Mental Health Services Administration, 2017).
    3. Specific Aims
        1. To compare participant levels of nicotine dependence and carbon monoxide before and after implementation of GFAQ.

2. To assess smoking behaviors, including quit rates, among GFAQ participants.
3. To describe participant self-efficacy for physical activity before and after implementation of GFAQ.

2. Body
    1. Methods
        1. Design
            1. Preliminary analysis of a pilot program examining the impact of GFAQ program for women of childbearing age, who live in a residential SUD treatment facility, to quit smoking.
            2. Participant Eligibility
                1. Women of childbearing age (18-45 years old), including pregnant women (<30 weeks gestation) who received approval from their Healthcare provider.
                2. Current use of cigarettes (100 cigarettes in their lifetime and any cigarettes smoked in the past 30 days).
                3. Current resident in a local SUD treatment program.
                4. Contemplation, preparation or action stage of Readiness in Transtheoretical Model
        2. Data Collection
            1. Data was collected at three study time points: enrollment, session 5 (week 5), and session 10 (6 months, study conclusion)
            2. Participants self-reported their measures of smoking behavior and physical activity through the uses of surveys.
            3. Fagerstrom Test for Nicotine Dependence (FTND) was administered to evaluate nicotine dependence.
            4. Expired Air Carbon Monoxide (EACO) was measured utilizing a Bedfont PiCO+ Smokerlyzer.
            5. NicAlert™ strips were used to validate urine cotinine level (>100 ng/mL to confirm smoking status)
        3. Analysis
            1. Descriptive statistics, including mean and standard deviation or frequency distribution, were used to summarize study variables.
            2. Paired t-test was used to evaluate changes in nicotine dependence and CO level from baseline to 5-week session and at study conclusion.
            3. Paired t-test was used to evaluate self-efficacy for physical activity from baseline to 5-week session. McNemar's tested for difference in regular physical exercise over time.
            4. All data analysis conducted used SAS version 9.4 with $\alpha = .05$.
    2. Results
        1. Twenty-three women, including 5 pregnant women, enrolled in the study.
        2. The majority of participants were white, single, had at least a high school education, and were unemployed.
            1. There was attrition throughout the study due to the use of a vulnerable population, some participants voluntarily left and others were unable to continue since they were no longer enrolled in the local substance abuse program.
        3. Among the eleven participants who finished the study, nicotine dependence was significantly lower ($p=0.004$) at GFAQ session 5 compared to scores at baseline, based on the FTND scores.
            1. At baseline the participants averaged a 5.13 on the Fagerstrom Test for Nicotine Dependence, which placed them at a moderate dependency level.
            2. At session 5 (5 weeks into the program) the level of nicotine dependence was lowered to 3.18, which changes the group to a mild nicotine dependence.

4. There was no significant difference in CO levels between baseline (mean= 10.3) and session 5 (mean= 10.6); however, levels were lower at study conclusion (session 10).
5. There was no significant difference in self-efficacy measures for participants' physical activity over time (p=0.28).
    1. Three of the six participants who reported no physical activity at baseline reported engaging in regular physical activity by session 5.
6. Three participants successfully quit conventional cigarette use by study conclusion as evidenced by self-report and validated by NicAlert and EACO values.

3. Discussion and Clinical Significance
    1. The results of this preliminary analysis support GFAQ as a feasible program.
        1. Of the 11 participants who completed the study, three successfully quit, highlighting the feasibility of this program.
    2. Women with SUD who wish to quit smoking may see benefit in using daily physical activity as positive replacement for their smoking behavior.

3. Conclusion
    1. Future studies are warranted to certify the results of this preliminary program.
        1. There are hopes to perform a randomized control trial with standard treatment compared to GFAQ to objectively compare participant outcomes.
        2. Test GFAQ program in a population of women of childbearing age who do not have a SUD, to determine if the same results would be seen if a different population.

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Professional Experience: I have been a University of Kentucky nursing research intern for the past two years. I have been enrolled at an accredited college of nursing for the last three years.
Author Summary: Kylie Dougherty is a senior at the University of Kentucky College of Nursing. She is pursuing her Bachelor of Science in Nursing degree. Her interest areas include pediatrics, smoking cessation and electronic cigarette usage. Kylie hopes to continue her education and either obtain her PhD or Doctorate of Nursing Practice.