The POWERPLAY workplace physical activity and nutrition intervention for men: Study protocol and baseline characteristics

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A B S T R A C T

Many health promotion programs hold little “manly” appeal and as a consequence fail to influence men’s self-health practices. That said, the workplace can provide an important delivery point for targeted health promotion programs by supporting positive aspects of masculinity. The purpose of this article is to, a) describe the intervention design and study protocol examining the feasibility of a gender-sensitive workplace health promotion intervention focusing on physical activity and healthy eating in male-dominated rural and remote worksites, and b) report baseline findings. This study is a non-randomized quasi-experimental intervention trial examining feasibility and acceptability, and estimated intervention effectiveness. The POWERPLAY program was developed through consultations with men and key workplace personnel, and by drawing on a growing body of men’s health promotion research. The program includes masculine print-based messaging, face-to-face education sessions, friendly competition, and self-monitoring concerning physical activity and healthy eating. Male participants (N = 139) were recruited from four worksites in northern British Columbia, Canada. Baseline data were collected via computer assisted telephone interview (CATI) survey which assessed physical activity, dietary behavior and workplace environment. This protocol will also be used to collect follow-up data at 6 months. A process evaluation, using semi-structured interviews, will be undertaken to assess feasibility and acceptability among participants and worksites. Study outcomes will guide intervention refinement and further testing in a sufficiently powered randomized control trial.

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1. Introduction

It has well been established that regular physical activity (PA) and healthy eating are associated with decreased prevalence of chronic disease (e.g., cardiovascular disease, some cancers, type 2 diabetes, obesity and poor mental health) and premature mortality [1–4]. Engaging men in the aforementioned health promoting behaviors, however, remains a public health challenge [5–8]. In general, men are less aware of the links between diet, PA and ill-health, less willing to attend lifestyle-related education sessions, and are less interested in information concerning disease prevention compared to women [9]. Furthermore, a large proportion of men do not meet the recommended PA guidelines [10, 11] (150 min or more of moderate intensity PA per week) and have poor eating behaviors, consisting of low consumption of vegetables and fruit and high intake of fat [7,12]. This trend is more prevalent in rural communities with greater isolation and less accessibility to PA opportunities and healthy food options [13,14].

Northern British Columbia (BC), Canada, is a regional area of the province comprising many isolated rural and remote communities. Men in these communities report some of the lowest levels of PA and fruit and vegetable consumption, and the highest levels of fat intake, alcohol consumption and tobacco use, compared to rural-dwelling women and the whole of BC [15,16]. Moreover, the prevalence of all cancers, cardiovascular disease, hypertension, asthma and chronic obstructive pulmonary disorder (COPD) is highest among men from Northern BC in comparison to other regions in the province [15,16].

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Thus, men from Northern BC are recognized as an unhealthy and ‘hard to reach’ population who would benefit from targeted effective programs to engage them in healthy lifestyle behaviors, such as PA and healthy eating.

Within this context, gender-specific programs that integrate locale specific masculine values and virtues are a lynchpin to engaging men with their health [17–20]. In Northern BC, masculine norms including competitiveness and resilience are often deeply linked to men’s paid work [21]. For example, mining, forestry and transport sectors predominately employ men, many of whom take on physically demanding and isolated work. Hence, beyond being men-centered, health promotion programs also need to be locale specific to engage potential end-users [22].

The goal of the POWERPLAY program is to improve PA and healthy eating behaviors by designing and evaluating innovative strategies that specifically address the unique needs of men living and working in rural and remote communities in Northern BC, Canada. This workplace program was built in response to the large, male-dominated workplaces located in the North, and previous research demonstrating that workplaces are an effective setting for improving PA and healthy eating behaviors in adults [23–25], and particularly in men [8,20]. The over-arching aim of the study was to examine the feasibility and acceptability of the POWERPLAY program, however, the specific objective of this paper is to describe the intervention design and study protocol, and report baseline characteristics.

2. Methods

2.1. Study design

This study is based on a quasi-experimental pre-post design to evaluate the feasibility and acceptability of a gender-sensitive workplace health promotion program focused specifically on PA and healthy eating in male-dominated work sites in rural and remote communities. The study period extends September 2014 to July 2015. Recruitment and baseline measures were assessed in the fall of 2014, and post-program measures will be completed in June 2015. Process evaluation measures will be completed in July 2015. Baseline and follow-up measures will be conducted via a computer assisted telephone interview (CATI) survey and process evaluation data will be collected via semi-structured interviews. Participants provided informed consent prior to participation.

2.2. Study population, recruitment and eligibility

Participants were recruited from male-dominated workplaces located in Northern BC, Canada. Work sites were selected based on their size (i.e., >200 employees), proportion of male employees (i.e., >50%), and their existing relationships with community partners and research team members. Four workplaces agreed to participate including two transport companies, a shipping terminal, and a regional municipality. Eligible participants were males 18 years of age or older who lived in the northern region and were employed by one of the four selected workplaces. As this study is based on a quasi-experimental pre-post design, and all participants will receive the intervention, there was no randomization and the study was not blinded.

Recruitment at each workplace included a number of strategies. For example, posters were designed to raise workplace awareness about the launch of the POWERPLAY program. Gender-sensitive messaging and imagery were used to entice men to consider their own health behaviors and participate in the program. Themes for posters included staying healthy to keep up with their kids and being a provider for their family — as these had been identified as relatable messages to the target audience. Prior to the start of the program, information sessions were held at each worksite to introduce the program. To further attract participation, confidential workplace health screenings (i.e., blood pressure and heart rate) were provided by nurses.

Information collected from the health screening were not used as an outcome measure for the program, rather as an opportunity to raise men’s awareness levels about their health behaviors and to use any information to support them to make small changes toward improving their health. Additional information about the program was provided and men were invited to sign up to be contacted by phone to participate in the program. Program sign-up sheets were left after each session for any additional men to consent to being contacted. Rolling recruitment occurred between September 2014 and October 2014.

2.3. Intervention

The POWERPLAY program was designed on the basis of our systematic review of PA interventions in males [5], focus group consultations with men and community partners, and existing literature concerning PA and healthy eating behaviors in men [6,8,26,27]. In addition, in designing the program we drew on established gender-related factors influencing men’s health and health promotion [28–30], and gender-specific promotional and delivery strategies found to be successful in promoting men’s health including the use of activity-led interventions, self-monitoring, stimuli to increase PA such as friend-competition and social interaction, and positive messaging [6,22,31]. The POWERPLAY program is comprised of a suite of resources including promotional materials, educational materials, booklets for self-monitoring, and implementation resources (e.g., weekly Toolbox Tips, tracking posters, team logbooks). Participants were also encouraged to progressively increase their PA levels and engage in healthy eating (e.g., increase vegetable and fruit intake) by participating in two challenges that focused on different strategies and approaches to increasing these behaviors. Both challenges included friendly competition between employees as well as tools (e.g., resources for tracking progress, pedometers) to assist with self-monitoring of PA and healthy eating behaviors. All resources and materials were designed to be gender-sensitive, incorporating a masculine look and feel and providing clear messaging around PA and healthy eating. Program components are detailed in Table 1.

The POWERPLAY challenges were designed as 6-week modules in which participants engaged in a variety of PA and healthy eating strategies. Each challenge was themed and encouraged friendly competition between workplace-determined teams. The first challenge focused solely on PA. During the first challenge, known as the Northern Circle Route Challenge, participants were required to accumulate enough steps to ‘virtually’ walk around Northern BC, a distance of approximately 3.66 million steps or 2775 km. To assist with this challenge, participants were given a personal pedometer and a My PLAYBOOK booklet (outlined below) and asked to record their daily step counts. Participants were encouraged to accumulate 10,000 steps per day, a goal which has been associated with indicators of good health [32–34]. Educational materials were also included and focused on providing participants with tips for; being active at work, healthy eating on the go, stress management, making healthy drink choices, and PA maintenance. Although POWERPLAY was primarily focused on PA and healthy eating, additional topics such as stress management and alcohol consumption were included for three reasons; 1) during the focus group consultations, the men indicated that they would like these topics to be included, 2) a report on men’s health in the study region pointed to the salience of these issues [15], and 3) research has suggested including such topics in health promotion interventions as these are additional risk factors to many chronic diseases [35,36]. All information materials were graphically designed to appeal to men, specifically tailored to include man-friendly language, imagery, and examples.

The second challenge, known as the POWER PLAY-OFF Challenge, focused on the accumulation of minutes of PA (rather than steps), as well as meeting a number of pre-determined healthy eating goals. The challenge was designed as a ‘virtual’ hockey game, where minutes
of PA were equivalent to time spent on the ice and achieving healthy eating goals were analogous to scoring goals in the game. Healthy eating goals where based on Canada’s Food Guide recommendations [37] and other healthy nutrition-related behaviors. There were ten goals in total, including eating; 5 vegetables or fruit in one day, 4 whole grain products in one day, 2 low fat milk products in one day, 3 servings of lean meat or alternatives in one day, as well as, having a soft drink free day, an alcohol free day, a red meat free day, an unhealthy snack free day, and a fast food free day. Information handouts were also included in the POWER PLAY-OFF Challenge, focusing on both PA and healthy eating including fueling your body, limiting alcohol consumption, healthy grocery shopping, and “keeping your stick on the ice” (referring to staying on track).

Participants were encouraged to track all PA and eating behaviors in a pocket sized booklet called My PLAYBOOK. The booklet included space to record personal health measures (e.g., blood pressure, blood glucose, cholesterol, etc.), develop challenge goals, create a personal contract, and record weekly challenge data. At the end of each week, participants were required to tear the respective week’s tracking log from their PLAYBOOK and return it to a workplace champion.

Workplace champions were identified at each worksite to lead the implementation of the program with the support and guidance of a POWERPLAY representative. Program champions emerged at each worksite based on their position within the organization (e.g., wellness committee member, and/or leadership). Workplace champions were encouraged to organize teams and promote friendly competition among participants. Workplace champions were also responsible for collecting participants tracking logs and recording the accumulated total of each team on a graphically designed tracking poster that visually represented progress. The posters were displayed within each workplace so that workplace teams could monitor progress. In the case of a between workplace team challenge, POWERPLAY representatives received accumulated totals from each workplace and posted results on a POWERPLAY specific Facebook page. Champions were encouraged to set up displays and offer informational sessions based on the theme of each week’s educational material. Discussion points, learning outcomes, goals, and helpful resources were provided (Toolbox Tips) to assist with preparation and facilitation.

2.4. Baseline measures

Baseline measures were collected via computer assisted telephone interview (CATI) survey. All participants who signed up to participate in the survey were contacted by a research assistant trained in CATI. Upon making contact, interviewers identified themselves, verified the telephone number, and obtained informed consent to conduct the telephone interview. Participants were then asked a series of questions concerning demographics, height and weight, PA and healthy eating behaviors (including questions regarding stages of change and self-efficacy for PA and healthy eating), and workplace environment. All interviews were conducted in English and averaged 36 min in duration. If initial contact was unsuccessful, a maximum of 10 call-back attempts were made before declaring a telephone number as “no contact.” Messages were left on the answering machine for the first attempt and eighth attempt if there was no contact or a gap in contact across several attempts. As an incentive and a token of appreciation for participating in the baseline telephone survey, respondents received a $20 gift card in the mail and were entered in a prize draw for a trip to a popular fishing resort (Value of $1000 CDN). Participants were also informed that they would receive another $20 gift card and be entered for an equally valued prize draw if they participated in the second telephone survey following the completion of the POWERPLAY program. Participation in the survey at both time points was open to all men employed at the workplaces and did not require a commitment to participate in the program.

2.4.1. Demographic and anthropometrics

Demographic data were collected including: age, place of birth, ethnicity, marital status, education and employment. Self-reported height (in centimeters) and weight (in kilograms) was collected to calculate BMI (kg/m²). Participants were offered information to assist with converting imperial measurements to metric; however, no assistance was provided with how to measure their height or weight.

2.4.2. Physical activity

PA participation was assessed through a modified version of the Godin Leisure-Time Exercise Questionnaire—GLTEQ [38]. The GLTEQ is

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### Table 1

Components of the POWERPLAY intervention.

<table>
<thead>
<tr>
<th>Major component</th>
<th>Sub-component</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Promotional materials</td>
<td>Teaser promotional posters</td>
<td>- Themed posters to raise awareness for the program and personal health behaviors</td>
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<tr>
<td></td>
<td>Facebook page</td>
<td>- Program information, including educational materials and URLs of other health promotion website and resources for further information</td>
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<tr>
<td>Educational materials</td>
<td>Tips for being active at work</td>
<td>- Five tips for ways to become more active at work</td>
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<td></td>
<td>Man meals on the go</td>
<td>- Strategies for eating healthy on the road or with little time to prepare meals</td>
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<td></td>
<td>Stress busting</td>
<td>- Common causes of stress and strategies to stay stress free</td>
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<tr>
<td></td>
<td>Choose your drink wisely</td>
<td>- Sugar content of common beverages and suggestions for healthy alternatives</td>
</tr>
<tr>
<td></td>
<td>Staying on track</td>
<td>- Tips for staying motivated and maintaining PA</td>
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<td></td>
<td>Fuel for power</td>
<td>- Suggestions for healthy meals that will provide ample sustenance and achieve satiety</td>
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<tr>
<td></td>
<td>Keep your head in the game</td>
<td>- Recommendations for consumption of alcoholic beverages</td>
</tr>
<tr>
<td></td>
<td>Shopping like a pro</td>
<td>- Strategies for limiting alcohol intake</td>
</tr>
<tr>
<td></td>
<td>- Strategies for making healthy choices at the grocery store</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Suggestions for healthy options</td>
<td>- Short and long term effects of alcohol consumption</td>
</tr>
<tr>
<td>Self-monitoring</td>
<td>Keep your stick on the ice</td>
<td>- Pocket size booklet to self-monitor personal progress during the two challenges</td>
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<td></td>
<td>My playbook</td>
<td>- Personal step counter provided to participants at the beginning of the program to track walking behavior during the first challenge</td>
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<tr>
<td></td>
<td>Pedometers</td>
<td>- Strategies for maintaining a healthy lifestyle</td>
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<tr>
<td>Implementation support</td>
<td>Tracking posters</td>
<td>- Tracking posters to graphically represent teams progress during the two challenges</td>
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<td>Weekly toolbox tips</td>
<td>- Weekly discussion points and suggestions for activities provided to workplace champions for presentation during the challenges</td>
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<td></td>
<td>Environmental recommendations</td>
<td>- Provide consultation with employers on strategies for situationally modifying the built environment to better support PA</td>
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<tr>
<td></td>
<td>Policy changes</td>
<td>- Provide consultation with employers on strategies for adapting policies to better support PA and healthy eating</td>
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<tr>
<td>Challenges</td>
<td>Great Northern Circle Route challenge</td>
<td>- 6-week pedometer based walking challenge</td>
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<td></td>
<td>Power playoff challenge</td>
<td>- 6-week combined PA and healthy eating challenge</td>
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a reliable and valid tool [39,40] which asks participants to indicate the frequency and type of intensity (light, moderate, vigorous) of their PA sessions, this was modified to include the duration (minutes) of these sessions [38]. PA levels were calculated using the Met-min method [41]. A cut-off point off ≥600 Met-min was then used to dichotomize participants as either “adequately active for health benefit” or “inadequately active” [41,42].

2.4.7. Workplace environment

Process evaluation (semi-structured interview outlined in Process up time period. Participants will also be invited to participate in a workplace environment, will also be assessed at the six month follow-up time period. All outcome measures assessed at baseline, including; weight, PA and healthy eating behaviors, stages of changes, self-efficacy and workplace environment. All outcome measures assessed at baseline, including; weight, PA and healthy eating behaviors, stages of changes, self-efficacy and workplace environment, will also be assessed at the six month follow-up time period. Participants will also be invited to participate in a process evaluation (semi-structured interview outlined in Process Measures) to gain further insight concerning the feasibility and acceptability of the POWERPLAY intervention program.

2.4.3. Weekly walking minutes

Minutes spent walking in a week was assessed through three selected questions from the International Physical Activity Questionnaire [43] (“During the last seven days, on how many of those days did you walk for at least ten minutes at a time: (1) as part of work (2) to go from place to place (3) in your leisure time”). These were preceded by “How much time did you usually spend on one of those days walking (1) as part of work (2) to go from place to place (3) in your leisure time” respectively.

2.4.4. Eating behaviors

In open-ended questions, participants were asked to report on how many servings of fruits and vegetables they usually consumed in day, following a similar protocol previous used by Ma et al. [44].

2.4.5. Stages of change

Stages of Change [45] for PA was assessed through a series of four questions with different branching options depending on response. The instrument has previously been evaluated and reported on [46]. The stages of change instrument placed participants either in the pre-adoption stages (pre-contemplation, contemplation or preparation) or the adoption stages (action or maintenance) [46,47].

Stages of Change for healthy eating was assessed and scored similarly to the stages of change for PA where “regular physical activity” was replaced with “regularly eating 7 or more servings a day of vegetables and fruit”.

2.4.6. Self-efficacy

Using a validated measure of the transtheoretical model in an exercise sample [48,49], regular PA self-efficacy was assessed by asking participants “over the next 6 months, how confident are you that you can participate in regular PA on no less than 5 days of the week?” Rated on a Likert scale from “not at all confident” to “extremely confident” (1–5).

Healthy eating self-efficacy was assessed through two questions adapted from the Plotnikoff et al. [48] measure. One which asked participants how confident they were in eating two servings of fruit a day and the other asked participants how confident they were in eating five servings of vegetables a day. Both were rated on a five point Likert scale, 1 = not at all confident to 5 = extremely confident.

2.4.7. Workplace environment

The Perceived Workplace Environment Scale—PWES [50], a six item five-point Likert scale, was used to determine how supportive the workplace environment is for PA [51,52]. An average score was calculated using all six questions to determine an overall perceived workplace environment score. Reliability and factor analyses supporting a one-dimensional factor structure have previously been reported [51].

2.4.8. Follow-up measures

Using the same CATI survey protocol to collect baseline data, a follow-up assessment will occur at six months post baseline data collection. All outcome measures assessed at baseline, including; weight, PA and healthy eating behaviors, stages of changes, self-efficacy and workplace environment, will also be assessed at the six month follow-up time period. Participants will also be invited to participate in a process evaluation (semi-structured interview outlined in Process Measures) to gain further insight concerning the feasibility and acceptability of the POWERPLAY intervention program.

2.6. Statistical analysis

Data from pre and post questionnaires will be analyzed using general linear models. Interaction effects of time point and worksite on dependent variables will be assessed. All analyses will be conducted using SPSS for Windows (V.22). The level of significance (α) will be set at 0.05. As the primary outcome is feasibility, a power calculation was not performed.

2.7. Process measures and analysis

Following completion of the program, semi-structured interviews will be conducted with the men who participated in the program and the stakeholders who implemented the program. These interviews will be used to explore program feasibility, satisfaction, and challenges of program implementation, and the findings will support any necessary refinements to the program for further testing (RCT) and dissemination. The process evaluation interviews will be audio recorded to ensure accurate transcription of the information. The audio recording will be transcribed verbatim in a non-identifiable form and the recording deleted.

Data from the process evaluation interviews with the men and stakeholders will be analyzed using thematic content analysis. To ensure rigor, two members of the research team will independently identify and code participant responses into relevant sub-themes. Once all coding has been completed, the sub-themes will be openly discussed among the two research team members to ensure that bias was minimized. Any disagreements or concerns that may arise during the analysis will be presented at this time and further discussion will be carried out until consensus is reached. This process will occur separately for each unit of analysis — the participants and the stakeholder.

2.8. Baseline characteristics of the sample

Across the four worksites, 212 men signed up to participate in the CATI survey. Of these, 139 men were successfully contacted and consented to completing the survey (response rate 68.5%). The proportional distribution was relatively equal across the four worksites (n = 29, 31, 39 and 40). The mean age was 43.7 (SD 12.5), with a range of 18–66 years and a mean BMI of 28.6 kg/m² (SD 4.1). Engagement in recommended levels of PA (150 min/week of moderate to vigorous PA) was reported by 66.7% of the sample and the daily average number of servings of fruit and vegetables was 3.26 (SD 1.9). With regards to stages of changes for PA, 61.9% of participants were in the action or maintenance stages of participating in regular PA, no significant differences were found between worksites. The majority of participants (92.1%) were in the pre-adoption stages of change for eating healthy. When assessing workplace environment, the average PWES rating across all participants was 2.76 (std. = .894). Table 2 provides a detailed description of the baseline characteristics of the sample.

3. Discussion

This article describes the intervention design, study protocol, and baseline characteristics of the POWERPLAY program, a workplace PA and healthy eating intervention specifically designed for men living and working in rural and remote communities. Engaging men in preventive health measures, such as PA and healthy eating can be challenging. Recruitment, for example, of notoriously ‘hard to reach’ men is widely chronicled [53,54], highlighting the need to employ innovative strategies and approaches to peak men’s interest and entice them to participate. Specifically tailored and targeted, men-friendly recruitment strategies and approaches are strongly recommended.
when trying to re-norm men’s masculine ideals toward being proactive-ly involved with their health [6,19,55]. These recommendations, along with previous masculinities and men’s health research [28,29,56], affirm our strategies for identifying a particular setting (male-dominated workplaces) and designing gender-sensitive messaging to appeal to the values and norms of men living and working in rural and remote communities. By messaging and engaging men within environments familiar to them (i.e., the workplace) we were able to engage the men in ways that bypassed men’s resistance to health help-seeking and traditional hierarchical interactions synonymous with patient-provider consultations.

In addition to recruiting a ‘hard to reach’ population, we were especially interested in targeting men who were recognized as not active (defined as not meeting the PA recommended guidelines of 150 min or moderate-vigorous PA per week) [57]. Although we relayed this priority during the launch sessions (which acted as a primary recruitment method) and via the workplace champions, our baseline characteristics indicate that this was not accomplished given that nearly 67% of our sample met the recommended PA guidelines. In part, this could be a result of men’s overestimation, which is common with self-reported physical activity [58,59]; however, we believe that it most likely reflects our broad eligibility criteria and lack of participant screening prior to enrollment. Influenced by much cited challenges about recruiting men in general, and concerns that we might inadvertently shame some particularly vulnerable men, we decided against specifically targeting those who were inactive. In moving forward, the use of a comprehensive screening process prior to participant enrollment, such as a brief screening interview (specific to PA) previously recommended [60,61], could be trialed. It is important to note, however, that although a large proportion of the current study sample were active, the mean BMI of nearly 29 kg/m² indicated that our sample was predominately ethnic minorities, a large proportion of the current study sample were active, the mean BMI of nearly 29 kg/m² indicated that our sample was predominately ethnic minorities, a large proportion of the current study sample were active, the mean BMI of nearly 29 kg/m² indicated that our sample was predominately ethnic minorities, a large proportion of the current study sample were active, the mean BMI of nearly 29 kg/m² indicated that our sample was predominately ethnic minorities, a large proportion of the current study sample were active, the mean BMI of nearly 29 kg/m² indicated that our sample was predominately ethnic minorities, a large proportion of the current study sample were active, the mean BMI of nearly 29 kg/m² indicated that our sample was predominately ethnic minorities, a large proportion of 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