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Dash of Faith: A Faith-Based Participatory Research Pilot Study

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Abstract

The Dash of Faith pilot used a community-based participatory research approach to design an experiential dietary intervention based in two African-American churches, one intervention and one comparison. Congregation members identified components that were incorporated into 12 weekly and 4 monthly sessions, with a goal of increasing fruit and vegetable and lowering fat intake. At two months, a marginally significant ($p=0.07$) increase in fruit and vegetable consumption was observed in the intervention group but was not maintained at study conclusion. We propose that these mixed findings may be attributable, in part, to bias introduced by the participatory nature of the design.

Keywords

faith-based intervention; community-based intervention; nutrition; African-American

Introduction

The marked health disparities that impact African-American (AA) communities have been the focus of much chronic disease research. Despite years of research, large racial disparities in life expectancy still exist. Currently, the life expectancy of European American (EA) men and women is 76 and 81 years of age, respectively; versus 70 and 77 years in AA men and women, respectively (National Center for Health Statistics, 2011). The most recent cancer incidence data for all anatomic sites shows AAs have 482 new cases per 100,000 people compared to 458 new cases among EAs (National Center for Health Statistics, 2011). Disparities also are seen in other chronic diseases such as stroke (prevalence of 2.5% among

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Conflict-of Interest Statement

The authors report no conflict of interest pertaining to this submission.

EA compared to nearly 4% among AAs) and diabetes (prevalence of 9% among EA compared to over 16% among AAs) (National Center for Health Statistics, 2011). Diet is known to affect the risk for a variety of these health outcomes, including obesity, cardiovascular disease, stroke, and cancer (Danaei, 2009; Fraser, 2009; Galimanis et al., 2009; Dossus et al., 2008; Kahn et al., 2008; Baker, 2007; Everitt et al., 2006; Tercyak et al., 2006). Diets high in fruits, vegetables, and whole grains have been shown to decrease mortality and increase the number of healthy life years (Fraser, 2009; Galimanis et al., 2009; Berkow et al., 2006; Popkin et al., 2006). Given the important role of diet in disease prevention and control, programs aimed at promoting healthy eating among populations at increased risk of chronic diseases provide an important strategy for improving health outcomes. However, traditional, individual-level dietary interventions have demonstrated limited success in terms of effecting materially relevant changes (Kahn et al., 2008), especially in minority and other special populations requiring cultural sensitivity (Krummel et al., 2001; Coates et al., 1999; Connet et al., 1984). One factor at play in this lack of success is the complex nature of dietary behaviors. As highlighted by the socio-ecological model, behaviors are influenced by interactions between intrapersonal, interpersonal, as well as social and environmental factors (McLeroy, 1988). What we eat is influenced by a complex and dynamic array of interacting factors, and it is becoming clear that behavior is determined more by group processes, e.g., family, friends, church, community, culture, etc., than by individual-level factors acting in isolation (Peterson et al., 2002; Go et al., 2001; Hebert et al., 1999; Germov et al., 1996; Kristal et al., 1995).

Church is a social context, which plays an important role in the lives of many AAs. Churches have long been considered the cornerstone of AA communities; with the mission of many AA churches extending to social, economic, and political issues affecting their congregants and the larger community (Campbell et al., 2007; Mamiya, 2006). Due to inequities in social and economic status as well as a mistrust of traditional health systems, many AAs turn to trusted community sources, such the church, for health information (National Center for Health Statistics, 2011; Campbell et al., 2007; Mamiya, 2006; Matthews et al., 2002;). AAs also are markedly more religious than the United States' population as a whole, with 87% claiming formal religious affiliation and 79% reporting religion being very important in their lives (The Pew Forum on Religion and Public Life, 2009). Faith-based settings, especially AA churches, are recognized as being an important venue for innovative health promotion programming (Campbell et al., 2007; DeHaven, 2004) and are becoming increasingly popular venues for health promotion programs and research (Wilcox et al., 2010; Faridi et al., 2009; Wilcox et al., 2007; Young, 2006; Resnicow et al., 2005; Campbell et al., 2004; Resnicow et al., 2004; Ammerman et al., 2002; Resnicow et al., 2001; Yanek, 2001; McNabb, 1997; Campbell et al., 1999; Kumanyika et al., 1992; Wiist, 1990;). The frequency of meals served within the church also has been noted. In addition to meals associated with Wednesday and Sunday services, many churches also have receptions and meals held for landmark occasions such as church and pastor anniversaries (Kegler, 2010). Church meals have been acknowledged as having the potential to impact overall dietary behaviors and thus have been the focus of faith-based studies aimed at faith-based health promotion (Baruth et al., 2011; Kegler, 2010; Resnicow et al., 2004; Resnicow et al., 2002; Campbell et al., 2000).

Also, growing in popularity is the use of a community-based participatory research (CBPR) approach, especially when addressing the issue of health disparities and working with minority populations who have historically been marginalized by traditional research (Agency for Healthcare Research and Quality, 2009; Viswanathan et al., 2004; Israel, 1998). At its heart, CBPR strives to achieve an equitable and collaborative partnership between research and community groups with each having shared decision making power and mutual ownership of the project, its direction, and its outcomes (Viswanathan et al., 2004; Minkler,

2003; Israel, 1998). One concern raised with CBPR is how to balance the rigor expected in traditional research with the collaboration needed for community engagement (Viswanathan et al., 2004; Minkler, 2003; Israel, 1998). The “gold standard” for traditional research is the randomized controlled trial (RCT). However, an evidence report on CBPR published by the Agency for Healthcare Research and Quality, found only 4 out of 12 studies reporting on completed CBPR interventions used an RCT design to evaluate their intervention outcomes, another 5 studies reported using a quasi-experimental (i.e., non-randomized) design, and the other 3 reported various non-experimental designs. None of the 12 studies included a diet intervention. In fact, faith-based diet interventions using CBPR approaches are rare (Wilcox et al., 2010). Given the lack of CBPR-based interventions in faith-based context, a partnership was created with two AA churches to develop and pilot an experiential healthy cooking class. The purpose of this study was to combine a CBPR approach with a quasi-experimental design that utilized a control group to implement a faith-based diet intervention aimed at church repast committees. We hypothesized that diet intervention church participants would increase their fruit and vegetable intake while decreasing their fat intake over the 8 month intervention period.

Methods

The Dash of Faith project was developed in partnership with the AA, faith-based community. Its theoretical foundation for faith-based community engagement was based upon The Body and Soul program (Resnicow et al., 2004), which promotes dietary change through both individual and environmental elements. In alignment with our CBPR approach, the project began with a request from the community for healthy food preparation training for AA church repast committees. The intervention was based both on input from participants as well as principles from Social Cognitive Theory (SCT) (Bandura, 1986). It was theorized that by building participants’ nutrition and culinary skills their behavioral capacity can be increased and thus aid in long term behavior change. Other aspects of SCT such as goal setting and the inclusion of the senior pastor, the church’s First Lady, and other church leaders who serve as role models also were included in the intervention design. The Institutional Review Board of the University of South Carolina reviewed and approved all research procedures.

Two local AA churches were recruited for this project. A form of self-selection was used for intervention assignment. Two AA Baptist churches agreeing to participate in the pilot study were recruited by the YWA’s Health Ministry director. Before enrollment, the churches were assessed to assess similarities in their facilities, repast committee size, congregation size, and the communities from which their congregations were derived. The first church recruited served as the intervention church and the second church recruited served as the control church. In an effort to ensure compliance and good community relationships, the research team offered to conduct the intervention classes for the control group at the conclusion of the 8-month comparison period. Participants within each church included all individuals on the church’s repast committee. In keeping with the CBPR nature of the study, beyond being over the age of 18, no exclusion criteria was employed in recruiting within the churches.

A Community Advisory Panel of 10 individuals was created to determine the content, format, and implementation procedures of the intervention. Panel members included community leaders and other individuals who were selected based on their knowledge of the AA community in general and faith community in particular. Members also included individuals who learned of the study and were interested in providing their expertise in nutrition or health disparities. Class content was directed by participants through a focus group session where members of the intervention church identified four areas they would

like to have stressed in the program. These areas were: 1) a focus on skill development and meal preparation, 2) use of guest speakers to explain topics, 3) discussion and methods to overcome barriers related to congregation motivation, and 4) the use of recipes and taste testing to reinforce the idea that healthy eating tastes good.

The intervention consisted of 12 weekly classes followed by 4 monthly “booster” sessions provided over the course of 8 months. As December fell in between the weekly classes and booster sessions, no classes were offered during that month. Based on themes resulting from the focus group, the classes incorporated culinary skill development through hands-on cooking in every class. The types of foods prepared were based on the interests and needs of the participants. Food themes included casseroles, holiday, breakfast, ethnic, and kid-friendly foods. All recipes were created with a focus on lowering fat and sodium consumption, and increasing fruits and vegetables. Half-way through the weekly sessions and during the booster sessions, potlucks for the class participants were included to provide opportunities for skill demonstration. Participants invited congregational members and community residents as guests, along with the senior pastor and the nursing ministry to participate and discuss ways to overcome barriers to incorporate healthy meals into church norms. Classes were two hours in length, which provided time for discussion and introduction of healthy skills such as planning meals based on MyPyramid, label reading, label comparison, and recipe modification. Guest speakers discussed the relationship between diet and health, food safety, how participants could take what they learn and motivate others, and how to start a community garden. The control group received access to general cancer information and presentations that coincided with their assessments at 3 and 8 months. After the study completion, the intervention was provided to the control group.

At baseline, all participants completed the National Cancer Institute’s percentage of Energy from Fat Screener (Greene et al., 2008; Peterson et al., 2008) and a fruit and vegetable screener (Thompson et al., 2008; Williams et al., 2008) from the National Institutes of Health’s Eating at America’s Table Study. In addition, participants completed a survey adapted from the Behavioral Risk Factor Surveillance Survey (BRFSS) (Center for Disease Control and Prevention, 2002), which ascertained basic demographic information, average servings of fruit and vegetables per day, intent to eat 5 or more servings of fruit and vegetables/day, duration of the consumption of 5 or more fruit and vegetable servings/day, attempts to lose weight, and current weight and height. All dietary and anthropometric questions were re-assessed at 2, 4, 6, and 8 months during the study period. All questionnaires were examined by study staff for completeness and participants were asked to complete any unanswered questions.

All analyses were conducted using SAS[®] version 9 (Cary, NC). Both the fruit and vegetable and the fat screeners were scored using previously published algorithms (National Cancer Institute: Cancer Control and Population Sciences, 2009a, 2009b). Descriptive statistics were computed and compared for each group. The PROC MIXED procedure was used to detect differences between pre and post-intervention variables among the two groups. The MIXED procedure was utilized because it uses *residual maximum likelihood* methods to fit the data structures because it can take into account both unbalanced samples and missing data. Potential confounding variables considered for the analysis were gender and age.

Results

Descriptive statistics are shown in Table 1. A total of 10 intervention arm and 13 control arm participants completed the study. Overall, participants had a higher-than-average age, with a mean age of 62 years for the intervention group and 60 years for the control group.

The majority of participants were women and most had not attended school after high school.

As shown in Table 2, a marginally significant difference in fruit and vegetable consumption was present between the intervention and control group at baseline. The largest increase in consumption was noted in the intervention group and was marginally significant compared to the decrease seen in the control group (+70% versus -9%, $p=0.07$). Unfortunately, this increase was not sustained over the 8-month intervention period, with the intervention group showing an overall 6% increase versus the 29% decrease found in the control group ($p=0.25$).

The positive changes seen in fruit and vegetable consumption were not duplicated for fat intake (Table 3). At baseline, there were marginally significant differences noted between the two groups, with the control group consuming 34.7% of calories from fat versus 31.4% in the intervention group ($p=0.08$). Over the duration of the study period, the intervention group realized a 0.8% decrease (p -value comparing baseline = 0.58) while the control group experienced a statistically significant 4.3% reduction (p -value comparing baseline <0.01). These differences approached significance (p -value for change over time = 0.06).

Table 4 shows changes in body weight. Similar to fat intake, the intervention group demonstrated a marginally significant 1.5% increase in body weight ($p=0.07$), while the control group experienced only a 0.8% increase. This change over time was not statistically significant between the 2 groups ($p=0.53$).

Discussion

Using a faith-based, CBPR approach and a quasi-experimental (i.e., non-randomized) design, this pilot study implemented an experiential healthy cooking class aimed at increasing fruit and vegetable consumption while reducing fat consumption among participants from AA Baptist church repast committees. Our intervention showed an increase in fruit and vegetable consumption among the intervention group during the first two months, compared to the control group. However, an overall decrease in fat intake (baseline to 8 months) also was seen in the control group. Our sample size ($n=23$) limited the analyses that we were able to conduct and therefore lead to cautious interpretation of study results.

Comparability of Study Findings

Previous faith-based studies have shown increases in fruit and vegetable intake of approximately one serving/day when studying larger sample sizes (Resnicow et al., 2005; Campbell et al., 2004; Resnicow et al., 2004; Resnicow et al., 2001; Campbell et al., 1999). Initially, our control church demonstrated slightly higher fruit and vegetable consumption at baseline compared to our intervention church. As this was not a randomized study and focused on the implementation of a faith-based intervention in a real-world context, we were not surprised by this variation. This may be partially attributable to the impact of both self-selection (for the church) and known non-random bias for dietary self-report such as social desirable and social approval. In previous research, we have shown a strong influence of these two biases on dietary self-report (Adams et al., 2005; Hebert et al., 2002; Hebert et al., 2001; Hebert et al., 1997). The church who participated in the intervention was the first one to respond to the call for participants in this study. This high motivation may have also indicated an underlying acceptance that there was a “less healthy” diet among members, and thus been more likely to accurately represent their food intake at baseline. More importantly, our experiential diet intervention showed a marginally significant increase in fruit and vegetable intake; i.e., by 2.3 servings in the intervention group after 2 months. Intake

remained elevated through 4 months at levels consistent with previous studies; however, it was not significant in our study. Intake also appeared to remain elevated in the intervention group while it declined in the control group over the course of the study period, but the small sample size precluded statistical significance. The positive trends seen in fruit and vegetable intake may be due to the experiential nature of the intervention. Lack of food preparation skills has been reported as a major barrier to eating meals prepared in the home and making healthier food choices (Fulkerson et al., 2008; Larson et al., 2006). Cooking classes have been identified as a preferred method of delivering nutrition education (Birkett et al., 2004) and have shown positive dietary changes beyond those of traditional nutrition counseling (Newman et al., 2005). In addition, having direct involvement in preparing food has been shown to lead to greater improvement in cooking behaviors than demonstration-based instruction alone (Levy et al., 2004). Our experiential methods may be enhanced by additional efforts to change social norms within the church (e.g., behavior change programming aimed at pastors and church leaders, changes to messaging and environmental factors within the church). Such additions, were outside the scope of our study, but may help in the sustainability of behavior changes over time (Baruth et al., 2011; Kegler, 2010; Williams et al., 2009).

The decrease in fat intake in the control group is puzzling and unexpected. Based upon our work on social approval and social desirability in the self-reporting of healthy behaviors (Adams et al., 2005; Hebert et al., 2002; Hebert et al., 2001; Hebert et al., 1997), it is possible that the desire for social approval was higher in the control group and led to these observed differences. Baseline body weight means were 203 and 202 pounds for the intervention and control groups respectively and the participants were primarily female. Given our previous work and the higher body weight of this group of participants, it would be expected that some social approval and social desirability bias would be present (Adams et al., 2005; Hebert et al., 2002; Hebert et al., 2001; Hebert et al., 1997). In addition, the CBPR approach taken with this study meant we worked with a community who recognized the need for dietary change and were interested in making changes to their fruit, vegetable, and fat intake. Given the control group also started the study with fruit and vegetable intakes significantly higher than the intervention group, the drop in their fat intake may be an indication that they were already making dietary changes when the study began.

Contextual Implications

Little is known about the impact CBPR has on research that is also faith-based. While faith-based interventions are growing in number and have shown beneficial results (Adams et al., 2005; Hebert et al., 2002; Hebert et al., 1997; Hebert et al., 2001), very few faith-based studies have also included CBPR methods (Campbell et al., 2007). CBPR-based studies in general have reported lessons learned or how the principles of CBPR were implemented with few reporting the results of their efforts (Wilcox, et. al., 2007). In addition to the lack of reported findings, there has also been a call for more rigor in the evaluation of studies using CBPR approaches (Austin, 2011; Kaplan, 2009; Kotechi, 2002; Peterson et al., 2002). A search of the literature for faith-based studies that utilized a CBPR approach and a control group in a faith-based setting yielded only two other studies. A CBPR pilot study with rural, African-American churches aimed at weight loss through diet and physical activity behavior change (WORD) found a decrease in weight and increase in physical activity, but no changes on fat intake between the intervention and control group (Viswanathan et al., 2004). That study utilized a quasi-experimental design similar to the one utilized in the Dash of Faith study. Another faith-based, CBPR study that utilized a randomized-controlled design looked at physical activity outcomes with congregation members in 303 churches (Health-e-AME) and found no overall difference between intervention and control groups (Yeary, 2011; Kim, 2008).

Health-e-AME reported issues with keeping interest and active participation high, an inability to evaluate the dose and quality of the training for intervention leaders, and a lay health leader model as factors that may have influenced their null findings (Wilcox et. al., 2007). In the WORD study, no reasons were given for why dietary outcomes did not change, even though perceived social support for healthy eating increased, physical activity increased, and weight decreased in the intervention group. CBPR was noted to help in recruitment of lay leaders but not participants for the study, and while retention remained high, half of the participants attended fewer than half of the classes offered. In contrast to the factors felt to influence outcomes in Health-e-AME and WORD, Dash of Faith utilized a health professional to lead classes and had very high attendance and retention. Two intervention group members dropped due to time and issues related to childcare, no control group members dropped, and participation at intervention classes averaged 87.5% with no one attending fewer than 10 of the 16 classes.

Methodological Implications

The authors question if one of the strengths of Dash of Faith, its participatory nature, may have influenced the results seen in our study. CBPR encourages the community to take an active role in both the identification of problems they want to address and approaches used to find solutions. Initially, the research group was approached by concerned community members who wanted to increase healthy eating in the church environment. In addition, throughout the study, an advisory committee comprised of researchers and community members took feedback from participants and church leaders and used it to make adjustments to the study. For example, leaders within the control group requested educational sessions to coincide with the times when data was being collected after their 2-month assessment. To honor this request, while not contaminating the study design, materials related to cancer screening were provided. A presentation on prostate cancer screening, materials and information on breast cancer screening, and materials and information on colorectal cancer screening were provided to the control group at their 4-month, 6-month, and 8-month assessments. The control group was given the intervention classes after their 8 months in the control arm. However, provision of education, while focused on cancer screening, may have prompted already health-focused participants to seek out other venues of healthy living, thereby influencing their dietary intake.

Despite the mixed results found, strengths of this study include its experiential nature as well as its use of a CBPR approach. As stated earlier, this is the only attempt we could find where a CBPR approach was used in a faith-based study, and a control group was utilized in the evaluation of changes in fruit and vegetable and fat intake. Researchers should continue to dialogue with their community partners to establish rigorous and “creative” evaluation techniques that also will be able to detect changes in behavior. More traditional data collection items such as paper surveys may not have the sensitivity needed to detect changes in the CBPR environment where everyone may be at a “heightened awareness” of health behaviors or where there is a “motivated” comparison group. An environmental assessment of diet and physical activity messages present in churches, has shown that a large number of healthy eating messages are present in AA churches (Wilcox, et. al., 2007). In addition, perceived spoken and written information has been shown to be associated with increases in fruit, vegetable, and fiber (Harmon, 2011). Assessing the informational environment in addition to individual-level behavior change may be beneficial in future studies to help better understand the context in which interventions are being offered and to identify avenues of information highly motivated participants may be seeking for behavior change information.

Recommendations for Future Research

The incorporation of CBPR principles into intervention research also may present an opportunity to develop more targeted data collection tools. For our study, we opted to use a previously validated, readily available dietary screener. While these tools are less burdensome to the participant (usually completed in 15 minutes), they are not as accurate as other dietary assessment tools. Opting to use a more accurate and precise tool (e.g., 24-hour dietary recall) significantly increases cost and participant burden. So this underlines the need to develop instruments with high accuracy and precision, low cost, and low participant burden.

Additionally, researchers may need to think more carefully about the comparison group used for analysis. While the traditional comparison groups are useful and necessary for comparative analyses, the situation also may call for the inclusion of a second comparison group who is truly “naive” with respect to the behavior being studied. In this manner, results from analyses using the 2 different comparison groups can be compared and contrasted.

In our pilot study of a faith-based, CBPR experiential cooking class, we found increases in fruit and vegetable intake among the intervention group that did not remain significant after 2 months; however, we also found a decrease in fat intake among the control group. Based on our experience implementing and evaluating Dash of Faith, we encourage future CBPR in faith-based contexts to consider carefully data collection instruments, analytic methods and overall study design, including comparison groups that may be less involved in the development of the study. While there may continue to be some tension between CBPR research principles and scientific rigor, efforts to balance the two offers worthwhile input to the fields of dietary and health disparities research.

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Biography

Ms. Harmon is currently finishing her PhD in health promotion, education, and behavior at the University of South Carolina. She holds an MS in exercise science, a BS in human nutrition, and is a registered and South Carolina-licensed dietitian. Before beginning her work as a doctoral student, Ms. Harmon worked on over six research projects at the University of South Carolina that focused on the use of diet and physical activity to aid in the prevention of cancer and promotion of wellness. Much of this work was focused on health disparities impacting the African-American community. Her current work is focused on leadership and environmental influences within African-American churches and their impact on the diet and physical activity behaviors of congregation members.

Table 1

Demographics of participants by group

		<u>Intervention Group (N=10)</u>	<u>Control Group (N=13)</u>
		mean (standard error)/N(%)	mean (standard error)/N(%)
Age (years)		62 (8.9)	60 (11.6) ^a
Gender	Female	6 (60%)	10 (76.9%)
	Male	4 (40%)	3 (23.1%)
Education	Some High School	1 (10%)	2 (15.4%)
	High School Graduate	6 (60%)	5 (38.4%)
	Some College or Tech School	3 (30%)	3 (23.1%)
	College Graduate	0 (00%)	3 (23.1%)

^a
p<0.01

Table 2

Fruit and vegetable intake (servings per day)^a

Group	Baseline	2 Months	4 Months	6 Months	8 Months
Intervention	3.3 ± 0.9 ^b	5.6 ± 1.0 ^{c,d} (+70%)	3.9 ± 1.0(+18%)	3.7 ± 1.0(+12%)	3.5 ± 1.0 (+6%)
Control	5.6 ± 0.8	5.1 ± 0.8 (-9%)	3.8 ± 0.8 (-30%) ^e	5.4 ± 0.8 (-4%)	4.0 ± 0.8 (-29%)

^a data shown are least squares means (LSM) ± standard deviation (SD); percentages in parentheses represent interval changes in intake

^b p-value comparing groups at each interval >0.05 but 0.10

^c p-value for change from baseline <0.05

^d p-value comparing % change between groups at each interval >0.05 but 0.10

^e p-value for change from baseline >0.05 but 0.10

Table 3

Fat intake (percent of calories from fat per day)^a

Group	Baseline	2 Months	4 Months	6 Months	8 Months
Intervention	31.4 ± 1.3 ^b	31.7 ± 1.4 (+0.9%)	32.5 ± 1.4(+3.5%)	30.7 ± 1.5 (-1.9%)	30.6 ± 1.4 ^c (-2.5%)
Control	34.7 ± 1.3	32.0 ± 1.3 ^d (-7.8%)	32.3 ± 1.3 ^e (-7.0%)	30.9 ± 1.3 ^d (-11.0%)	30.4 ± 1.3 ^d (-12.4%)

^a data shown are least squares means (LSM) ± standard deviation (SD); percentages in parentheses represent interval changes in intake

^b p-value comparing groups at each interval >0.05 but 0.10

^c p-value for change from baseline <0.05

^d p-value comparing % change between groups at each interval >0.05 but 0.10

^e p-value for change from baseline >0.05 but 0.10

Table 4Body weight (pounds)^a

Group	Baseline	4 Months	8 Months
Intervention	203.0 ± 11.5	201.6 ± 11.5 (−0.7%)	206.0 ± 11.5 ^b (+1.5%)
Control	202.1 ± 11.1	202.9 ± 11.1 (+0.4%)	203.8 ± 11.1 (+0.8%)

^a data shown are least squares means (LSM) ± standard deviation (SD); percentages in parentheses represent interval changes in intake

^b p-value for change from baseline >0.05 but ≤ 0.10.