MeSH TERMS
- activities of daily living
- adolescent
- habits
- health behavior
- health promotion
- occupational therapy

OBJECTIVE. In this study, we explored the impact of an occupational therapy wellness program on daily habits and routines through the perspectives of youth and their parents.

METHOD. Data were collected through semistructured interviews with children and their parents, the Pizzi Healthy Weight Management Assessment©, and program activities.

RESULTS. Three themes emerged from the interviews: Program Impact, Lessons Learned, and Time as a Barrier to Health. The most common areas that both youth and parents wanted to change were time spent watching television and play, fun, and leisure time. Analysis of activity pie charts indicated that the youth considerably increased active time in their daily routines from Week 1 to Week 6 of the program.

CONCLUSION. An occupational therapy program focused on health and wellness may help youth and their parents be more mindful of their daily activities and make health behavior changes.


Childhood obesity is an epidemic in the United States affecting youth in several ways. Obesity during formative years may hinder the physical and psychosocial development of youth as well as their ability to participate in activities of their choosing (Pizzi & Vroman, 2013). The number of youth who are obese in the United States has more than quadrupled over the past 10 yr (Ogden, Carroll, Kit, & Flegal, 2014). The American Heart Association (2015) found that among children younger than age 18 yr, the highest rates of obesity were among Mexican-American male adolescents (28.9%) and non-Hispanic Black female adolescents (24.8%).

Many factors contribute to obesity, including genetics, behavioral and psychosocial factors, environmental factors, and family habits and routines. Empirical evidence has suggested that genetic factors play an important role in youth obesity (Silventoinen, Rokholm, Kaprio, & Sørensen, 2010; Sjøgren, 2013). For example, in a meta-analysis of 9 twin and 5 adoption studies, it was detected that genetic factors significantly affected the body mass index (BMI) of participants from age 1 yr through 18 yr (Silventoinen et al., 2010). Although genetic factors should be considered, many other factors can be altered to reduce one’s risk for obesity.

Behavioral factors—such as a youth’s eating habits, lifestyle, and activity choices—can lead to obesity (Karnik & Kanekar, 2012). Nationally, public policies focusing on nutrition and physical activity are being implemented to address childhood obesity (Karnik & Kanekar, 2014). Schools are increasing access to healthy foods offered at breakfast and lunch. Some states are adopting screening for BMI, diabetes, and fitness levels. Youth eating habits can be
modified with behavioral strategies, such as food boards, portion control plates, and pedaling an ergometer while watching television (DeMattia, Lemont, & Meurer, 2007; Karnik & Kanekar, 2012). Family-based approaches are also beneficial when they provide clear goals and reward systems (DeMattia et al., 2007). Structured behavioral treatment—such as problem solving, goal setting, and self-monitoring—has been found to provide 8%–10% weight loss in the first 6 mo of treatment (Foster, Makris, & Bailer, 2005). A behavioral approach emphasizes small changes with very specific and measurable goals (Foster et al., 2005).

Psychosocial difficulties can be both a cause and complication of obesity that should not be overlooked (Ludwig, 2012). More research is needed in this area; however, depression, anxiety, and self-esteem have been identified in studies as having a unidirectional or bidirectional relationship with childhood obesity and being overweight (Pizzi & Vroman, 2013; Russell-Mayhew, McVey, Bardick, & Ireland, 2012). Food may be used as an unhealthy coping strategy when dealing with depression, stress, anxiety, and other emotional distress, and many young people who are obese describe food as having addictive qualities (Pretlow, 2011). Youths who experience bullying, teasing, and peer victimization are more likely to be obese; research has shown that sometimes youths are bullied because they are overweight, and other times increased weight gain is the result of peer victimization (Jansen et al., 2014; Lumeng et al., 2010; Mamun, O’Callaghan, Williams, & Najman, 2013). Strategies to address psychosocial factors may include redirecting the focus on weight to creating programming that builds protective factors, fosters healthy relationships, promotes healthy body image, and connects young people to healthy adult role models (Pizzi & Vroman, 2013; Russell-Mayhew et al., 2012).

Environmental factors play a considerable role in the youth obesity epidemic. Youth between ages 8 yr and 10 yr average about 8 hr per day in front of screens and often use more than one type of media at a time, referred to as media multitasking (American Academy of Pediatrics, 2013; Rideout, Foehr, & Roberts, 2010). Youth who were considered heavy media users (more than 16 hr of media use per day) reported lower levels of contentment and lower grades in school (Rideout et al., 2010). Increased screen time contributes to high levels of sedentary activity and fuels the cycle of obesity (American Academy of Pediatrics, 2013). Despite new food industry self-regulation programs, 80.5% of food advertisements directed at youth on television were for items in the lowest nutritional category (Kunkel, Castonguay, & Filer, 2015). These food items—such as chips, candy, and soda—are often readily available at school, and this accessibility may be why some research has shown that students do not perceive the school food environment to be healthy (Gosliner, Madsen, Woodward-Lopez, & Crawford, 2011).

Because behavior, emotional support, and the environment are strongly influenced by family habits and routines, the role of family is considerable in obesity. Children with one obese parent have an elevated risk for obesity, whereas those with two obese parents have an even higher risk for obesity (Davison & Birch, 2001). Healthy family routines, however, can help lower the risk for obesity in youth (Anderson & Whitaker, 2010; DeMattia et al., 2007). Family routines have been shown to affect children as early as preschool. Preschool-age children exposed to three household routines of obtaining sufficient nighttime sleep, eating dinner together as a family, and limited screen time lowered their prevalence of obesity by 40%, as opposed to those who were exposed to none of the routines (Anderson & Whitaker, 2010). Similarly, Wansink and van Kleef (2014) showed that families who ate dinner together at the table on a regular basis had a lower body mass index than families who ate elsewhere.

Many factors contributing to childhood obesity cannot be changed; however, health behaviors may be affected by changes in child and family routines and habits. Integrative approaches are needed in which all of these factors are taken into account when developing programming and intervention, because prevention early in life has proven to be much more successful than treating obesity in adulthood (Fiese, Bost, McBride, & Donovan, 2013). The aim of the study described in this article was to explore the impact of a change in habits, routines, task behaviors, and engagement in daily occupations as the result of a 6-wk, occupation-centered community program.

Method

Design

In this study, we used a mixed-methods sequential design (DePoy & Gitlin, 2015). This design allowed us to learn about and understand the daily routines of the children in our study as well as the families’ larger routines and values.

Participants

Purposive sampling was used to recruit 10 children ages 8 and 9 yr and 10 of their parents from a community recreation program after approval from Loma Linda University’s institutional review board. All participants signed an informed consent form before the start of the
study. Eight of the 10 youth participants and 9 of the 10 parent participants were female (see Table 1 for demographic and family routine information). The 10 youth participants attended all sessions of the 6-wk Healthy Hearts program and completed pre- and postprogram interviews. In addition, 10 parent participants completed the initial demographic questionnaire and the postprogram interview.

**Instruments**

Parents completed a 16-item demographic questionnaire related to age, race, employment status, and media in the home. Preprogram semistructured interviews with the children consisted of 16 questions that were created on the basis of a review of the literature pertaining to daily habits, routines, and obesity. Each interview took up to 45 min to administer. The purpose of these interviews was to gather information about the daily routines and activities of the children to help us in designing the Healthy Hearts program.

During the Healthy Hearts program, we piloted the use of an activity pie chart in the form of an “activity clock.” The activity clock was designed by the research team to allow the children to record how many hours per day they spent in active time (green); rest, meal, and study time (yellow); and screen time (red). The use of the colors emphasized the go, slow, and stop visual imagery that youth were able to relate to traffic signals. Although the activity clock does not have established validity and reliability, it served as a useful visual tool for the children and their parents.

To assess program effectiveness, at the end of the 6-wk program, each participant and parent engaged in a semistructured interview and completed the Pizzi Healthy Weight Management Assessment© (PHWMA; M. Pizzi, personal communication, May 4, 2015). The PHWMA is an interprofessional assessment that is used to examine the impact of obesity in daily skill engagement for children and their families. In the PHWMA Parent/Guardian version, the parent is asked to respond by circling a number between 1 and 5 to rate whether he or she wants to make changes in a category. Parents can respond to 23 categories regarding behavior changes for their child, indicating whether they do not want to change, are thinking about changing, have decided to change, have already started changing, or need to maintain change. Some examples of the categories include choosing and doing play, fun, or leisure activities; getting ready for school; eating habits and routines; feeling safe at home; and participation in outdoor activities. Parents write down ideas for making changes and the stress levels associated with making changes, and then they prioritize five areas that they most want to change.

The PHWMA Child/Youth version follows the same format as the Parent/Guardian version. This tool was developed to meet the need for appropriate, occupation- and client-centered assessment based on the Occupational Therapy Practice Framework: Domain and Process (3rd ed.; American Occupational Therapy Association [AOTA], 2014), the literature on childhood obesity, and the stages of change theory (M. Pizzi, personal communication, May 4, 2015). More research is needed for further validity and reliability of the assessment; however, this assessment has been shown to be effective in developing occupation-based wellness interventions for children and their families (Suarez-Balcazar et al., 2015).

**Data Analysis**

Qualitative data were analyzed with a process of first-cycle and second-cycle coding (Saldaña, 2012). Interviews from the youth preprogram and from the youth and parent postprogram were transcribed and reread individually by the research team to improve interrater reliability. We used descriptive coding (Miles, Huberman, & Saldaña, 2013) to analyze the data and met as a group to discuss codes and confirm analysis. Second-cycle coding involved...
identifying patterns and categories to narrow the data (Miles et al., 2013). Concept mapping was then used to provide a visual representation of relationships and patterns. Through multiple concept maps, we gained an understanding of how concepts such as family routines and values, student learning, activity level, and parent expectations related to one another. This understanding then led to the emergence of our final themes (Buzan & Buzan, 2010).

Quantitative data were analyzed with the use of descriptive statistics in Excel (Microsoft Corp., Redmond, WA). Additionally, data were imported into IBM SPSS Statistics (Version 22; IBM Corporation, Armonk, NY), and Wilcoxon signed-rank tests were used to analyze changes in the youths’ reported green, yellow, and red times on their activity clocks from Week 1 to Week 6 (Table 2).

### Results

Three themes emerged from analysis of the qualitative data: Program Impact, Lessons Learned, and Time as a Barrier to Health (Table 3 lists additional quotes to support themes). Supplemental to these themes, the PHWMA provided information regarding what daily routines the youth and parents were thinking of changing, had already changed, or did not want to change. Further analysis of the activity clocks indicated some notable changes in weekly activity times for the youth after they participated in the program.

#### Program Impact

Many of the parents expressed that the program affected the children’s daily routines in a positive way. Jennifer explained, “I think that the project impacted the way they think about their daily routine and what goes into being healthy.” Several of the children noted that their daily routines had, in fact, changed since participating in the program. A specific change in routine was noted by Dana. Before the program Dana could not identify what

**Table 2. Results of Activity Clocks (N = 10)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mdn</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 1</td>
<td>50.00*</td>
<td>45.70</td>
<td>15.09</td>
</tr>
<tr>
<td>Week 6</td>
<td>52.50*</td>
<td>47.90</td>
<td>14.06</td>
</tr>
<tr>
<td>Yellow time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 1</td>
<td>14.50</td>
<td>15.80</td>
<td>3.85</td>
</tr>
<tr>
<td>Week 6</td>
<td>17.00</td>
<td>17.60</td>
<td>5.06</td>
</tr>
<tr>
<td>Red time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 1</td>
<td>7.00</td>
<td>10.10</td>
<td>5.84</td>
</tr>
<tr>
<td>Week 6</td>
<td>7.00</td>
<td>10.60</td>
<td>5.13</td>
</tr>
</tbody>
</table>

*Note. M = mean; Mdn = median; SD = standard deviation.*

*p < .05.*

Another change in routine that was discovered through the interviews was that some of the children changed the type of foods that they ate for meals and snacks as a result of the group. For example, Rebecca commented, “They only want me to buy organic fruits and vegetables, and they talk a lot about processed foods now... I didn’t realize how much processed foods we were eating.” Samantha elaborated on her daughter’s postprogram snack choices: “She is actually eating less candy.” Joan shared about her son’s mealtime choices: “He picks all the fruits and vegetables from the recipe cards. . . . He seems to pick more vegetables and fruit.”

After the program, some parents reported that they were already starting to make changes, such as spending more time engaged in occupations as a family. Fran shared, “We just basically needed an effort to get together more.” After the program, she reported that her family’s activity level increased and that their overall screen time decreased. Several of the families noted that during and after the program, they began to intentionally participate in more active co-occupations—such as bike rides, hula hoop activities, and jump rope activities—taught in the program and also began to play outside as a family. The parents found that increasing active time as a family was effective in reducing sedentary screen time.

#### Lessons Learned

All the children who were interviewed said that they learned something from the program. Balance was one of the lessons that came to light from the interviews. Nicole commented, “I learned that a little bit of everything is okay, but if you do too much of one thing or eat too much of one thing, it’s not so good.” Christine also commented, “We need to do a little bit of everything.” Moreover, Kristin said, “If you fill up the [activity] clock with too much of one thing, it’s no good.” Fran, Doug’s mom, shared that since the program the family had “talked a lot about balancing our activities like you guys in group, and he was just spending way too much time playing computer games.”

The youth participants also learned how to define the word healthy as a result of the program. During the preinterviews, 7 of the 10 youth were unable to define the word. Before the program, answers from the youth were vague, such as Nicole’s response: “Healthy means...”
Results of the PHWMA

The parents and children shared that they wanted to make health changes at the completion of the program. Occupational categories in which parents were starting to make changes after the 6-wk occupation-based programming included time spent watching television (30%); play, fun, and leisure time (20%); and eating fruits and vegetables (20%). Similarly, the occupational categories in which the children were starting to make changes were play, fun, and leisure time (30%) as well as time spent in front of the television (10%). Children and parents reported that they were satisfied with their participation in sports and did not want to change it.

Results of the Wilcoxon Signed-Rank Tests

Results of the activity clocks revealed a significant change in the amount of time spent in green active time (z = 22.2, p = .026). On average, the youth reported an increase in active time from 45.70 min per day in Week 1 to 47.90 min per day in Week 6. There were no significant changes in reported yellow (rest, meal, study) or red (screen time) activity (see Table 2).

Discussion

The Healthy Hearts program had a positive impact on the children’s health habits and routine. The program focused on routine awareness and practical ideas for incorporating more active time and healthy foods into their activities of daily living. In addition, the program emphasized easy strategies for changing task behaviors that might be detrimental to health. Evidence supports interventions that optimize health in a powerful way by focusing on habits surrounding physical activity, healthy nutrition, and sleep hygiene (Persch, Lamb, Metzler, & Fristad, 2015). Skillful, occupation-based analysis and focused intervention help prevent illness, promote wellness,
and demonstrate the value of occupational therapy in community settings (Persch et al., 2015).

Through the interviews, it was learned that the children were able to expand their knowledge of health, wellness, and daily routines by being able to provide a definition of health and to demonstrate the ability to make changes in their active time by the end of the 6-wk program. These results showed us that learning did occur, even within a relatively short period of time. This outcome may have occurred because the teaching was done through an occupation-based wellness group that was based on the needs of the youth and implemented through a focus on practical health-promoting strategies (Wilcock, 2006). These strategies were implemented over the course of the program by having the youth engage in meaningful occupations that could be incorporated into their daily routines, such as the activity clocks, activity cards, marble jars, food pyramids, recipe cards, and meal preparation skills (Table 4).

Although the youth had gained knowledge, the yellow (rest, meal, study) and red (screen) times on their activity clocks did not decrease significantly. Several reasons can explain why these times may not have decreased. Caution should be used with self-reporting of activities, as the youth did with the activity clocks. Participants may have a tendency to over- or underreport their levels of activity. The youth were encouraged to document their daily activity levels because delayed recording does increase inaccuracies (Yuen et al., 2013).

Another reason the youth may have been unable to change their yellow (rest, meal, study) and red (screen) times may be the lack of unstructured time, which was mentioned frequently during the interview process by both parents and children. Participants were parents and children of middle- and upper-class incomes who were able to afford programs, including sports, dance, and other recreational activities. The children’s schedules were very structured with school sports, recreation, and homework programs that left them with little to no free time on a regular basis. This strict scheduling did not allow for the opportunity to make many changes to everyday routines and tasks.

It was found that all of the parents desired continuation in programming such as the Healthy Hearts program. Care was taken to foster active occupational engagement during the program. Exploration, engagement, and empowerment are important practice strategies that occupational therapy practitioners use to engage clients and communities to promote health and wellness (Stoffel, 2015). The program helped participants explore new, often unfamiliar topics, and it empowered them to engage in meaningful tasks and daily occupations, such as making meals or snacks independently and for their family, exercising as a family, and improving sleep hygiene.

Children and parents were questioned about routines that they were thinking about changing, had changed, or needed to maintain. Whereas the parents started making changes for their families most commonly in the areas of watching television, the youth started making changes most commonly in the areas of watching television and play, fun, and leisure time, which were of importance to them. Occupational therapy practitioners should consider the goals and motivations of both youth and their parents to support a collaborative and family-centered approach to programming (DeMattia et al., 2007).

Occupation-based health programs have been found to enhance occupational performance, quality of life, and

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**Table 4. Healthy Hearts Group Topics**

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>What’s Your Routine?</td>
<td>Instruction in coloring activity clocks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Discussion of daily routines and balance of rest, exercise, school, screen time, and sleep</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Every session starts with warm-up aerobic exercises and ends with cool-down yoga exercises; healthy snacks provided every week</td>
</tr>
<tr>
<td>2</td>
<td>Let’s Exercise!!</td>
<td>Group brainstorming of fun exercise activities on whiteboard</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Youths create exercise cards to use at school and home</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Discussion of daily routines, ways to be more active throughout the day, and fun ways to decrease screen time</td>
</tr>
<tr>
<td>3</td>
<td>What’s on Your Plate?</td>
<td>Craft activity with food pyramid</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Discussion of food choices: food as fuel, balance to be your best, what is junk food?</td>
</tr>
<tr>
<td>4</td>
<td>Spend Your Day the Active Way!</td>
<td>Craft activity with marble jars: visual aid for measuring time spent in exercise, 1 marble for every 10 min, set a goal of 15 marbles per week</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group strategies for daily exercise at home, at school, and with family</td>
</tr>
<tr>
<td>5</td>
<td>Let’s Write It Down!</td>
<td>Craft activity designing recipe card box and writing down healthy, simple food and snack recipes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Healthy and fun alternatives to junk food and processed food</td>
</tr>
<tr>
<td>6</td>
<td>Cooking With My Family</td>
<td>Preparation of healthy snacks for family</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group wrap-up and reflecting on what was learned</td>
</tr>
</tbody>
</table>
occupational justice (AOTA, 2013b). Client-centered and holistic approaches that incorporate engagement in activities that are health promoting can improve health outcomes, prevent and treat obesity, and empower people to incorporate healthy habits into daily life (AOTA, 2013a). This study contributes to the limited body of literature suggesting that the integration of an occupation-based health group into community-based programming can considerably affect the daily health habits and routines of youth and their parents.

Limitations and Future Research
One of the limitations of this study was that only demographic data were collected with the parents before the start of the Healthy Hearts program. The PHWMA Parent/Guardian and Child/Youth versions were administered after the program, asking parents to reflect on their child’s experiences and health habits. Future researchers should use this assessment with parents and youth before programming. In addition, the small sample size of 20 participants limited the amount and diversity of data that were collected.

This group of participants was recruited in a suburban area with 10 youth who were already participating in a paid-for, after-school recreation program. Ideally, future researchers should seek to recruit a more economically diverse group of participants. The group in this study may not be representative of the general population, and results cannot be generalized to other communities and demographics. Despite these limitations, the impact of the program was positive and demonstrated the important role of occupational therapy in community-based settings.

Implications for Occupational Therapy Practice and Research
The findings of the study have the following implications for occupational therapy:

- Community-based occupational therapy programs can affect daily habits and routines of youth and their families.
- The PHWMA is a useful clinical tool for facilitating occupation-centered behavior changes for youth and their families for the treatment and prevention of obesity (for more information regarding the PHWMA, contact Michael Pizzi at mpizzi58@gmail.com).
- Enabling youth with family-centered ideas for physical exercise can create more active time in their days and reduce sedentary screen time.
- Empowering youth with easy and practical ideas can encourage them to incorporate health-promoting occupations into their daily routines.
- Understanding the impact of socioeconomic status is important when providing community programming; youth from affluent families may face unique challenges related to time use, habits, and occupational routines. Conversely, these families may not be restricted by the availability and cost of healthy food.
- Future research would benefit from including an exploration of occupational routines and habits related to socioeconomic status.
- Future programming, intervention, and research should use a family-centered approach.

References


